

HARMONY GROVE VILLAGE SOUTH

APPENDIX D

TRAFFIC IMPACT ANALYSIS

for the

FINAL ENVIRONMENTAL IMPACT REPORT

PDS2015-GPA-15-002

PDS2015-SP-15-002

PDS-REZ-15-003

PDS2018-TM-5626

PDS2015-MUP-15-008

Log No.: PDS2015-ER-15-08-006

JULY 2018

Prepared for:

COUNTY OF SAN DIEGO

PLANNING & DEVELOPMENT SERVICES

5510 OVERLAND AVENUE, SUITE 310

SAN DIEGO, CALIFORNIA 92123

FINAL TRAFFIC IMPACT ANALYSIS INFORMATION FOR THE READER

The Final Traffic Impact Analysis (Final TIA) contains additional information in response to comments received on the Draft Environmental Impact Report (DEIR). A number of comments were received on the DEIR and TIA, and for which the County requested additional technical review. Each of the items questioned was reviewed and addressed in a focused assessment, attached immediately following this Information sheet. The attachment topics and their order in this Final TIA are listed below.

Attachment A: Baseline Traffic Volumes Validation

This attachment provides a comparison of the existing baseline traffic volumes used in the Final TIA analysis and recently collected traffic data. The findings from this comparison validate the existing baseline analysis in the Final TIA.

Attachment B: Baseline Freeway Volumes Validation

This attachment provides a comparison of the existing baseline freeway volumes used in the Final TIA analysis and recently collected traffic data publicly available from Caltrans. The findings from this comparison validate the existing baseline freeway analysis in the Final TIA.

Attachment C: Revised Trip Assignment to the Auto Park Way/I-15 Southbound Ramps Intersection

This attachment provides the Final TIA Figures (Figure 7-1: Project Trip Distribution, Figure 7-2: Project Traffic Volumes; Figure 7-3 Existing + Project Traffic Volumes; and Figure 8-2 Existing + Project + Cumulative Projects Traffic Volumes) updated to correctly show the seven percent of Project trips (not 13 percent as incorrectly shown in the Draft TIA) assigned to the Auto Park Way/I-15 Southbound Ramps intersection. The figures were corrected to show this revision – a lowering of Project-assigned traffic percentages to the intersection. A supplemental peak hour level of service analysis also is included in this attachment, showing no changes to conclusions of significance at this location.

Attachment D: Supplemental Freeway Analysis for I-15 South of 9th Avenue/Auto Park Way

This attachment provides a supplemental freeway analysis of I-15 south of 9th Avenue and concludes that no new impacts would occur with the addition of Project traffic to this freeway segment.

Attachment E: Supplemental Peak Hour Intersection Analysis for Project Driveways A and C

This attachment provides a peak hour level of service analysis for the Project access roads located along Country Club Drive. LOS A operations are calculated, and no excessive queuing would occur on public streets.

Attachment F: Synchro 10 and HCM 2010 Peak Hour Intersection Analysis

This attachment provides the results of the Synchro 10 analysis using HCM 2010 methodology. Both the results of the intersection delays and levels of service are reported, and the supporting technical analysis worksheets are included. No new impacts were calculated using Synchro 10/HCM 2010.

Attachment G: Supplemental Discussion of the Approved Project Deviation South of Project Driveway A

This attachment addresses baseline existing conditions and Proposed Project conditions to Country Club Drive where a deviation is requested for the roadway design speed. The findings are consistent with those of the approved Design Exception provided in the Draft TIA.

Attachment H: Validation of Conservative Project Average Daily Traffic

This attachment addresses the conservative analysis performed in the Draft TIA. The Draft and Final TIA analyze the effects of 450 single-family residences using a higher trip generation rate than those that apply to the Proposed Project. The Project proposes a mix of single-family and multi-family residential units which utilize different trip rates, effectively reducing the total number of Project trips from 4,500 ADT to 4,090 ADT.

Attachment I: Modifications to Final TIA Figure 3-1: Existing Conditions Diagram

This attachment consists of revised Figure 3-1: Existing Conditions Diagram from the Draft TIA correctly depicting the lane geometry at the Valley Parkway/ 11th Avenue intersection. The Draft TIA incorrectly showed dual southbound left-turn lanes where only one left-turn lane is provided. The level of service analysis in the Final TIA correctly assumed the one left-turn lane. Therefore, no changes to the level of service analysis were necessary.

As noted, the information provided in response to comments on the TIA is clarifying in nature and consistent with conclusions made in the circulated documents. No changes were identified to less-than-significant, or significant, impact assessments based on these data, and therefore no changes were required to the Draft TIA based on these clarifying data. It remains a conservative document.

Similarly, the reviews undertaken in response to comments received resulted in confirmation of CEQA significance conclusions reached in the DEIR. The additional information provides clarification and additional documentation, but does not result in any significant new information requiring recirculation.

ATTACHMENT A

BASELINE TRAFFIC VOLUMES VALIDATION

BASELINE 2014 TO YEAR 2017 EXISTING DAILY COUNTS COMPARISON

City of Escondido Street Segments	Baseline 2014 Volumes (EIR Traffic Study)	Year 2017 Volumes (Validation Counts)	2017 Change over Baseline 2014
Auto Park Way			
1. Mission Rd to Country Club Dr ^f	26,110	28,240	8%
Citracado Parkway			
2. Avenida Del Diablo to Valley Pkwy	6,170	5,330	-14%
Valley Parkway			
3. 11 th Ave to Citracado Pkwy	24,110	21,620	-10%
4. Auto Park Wy to I-15 SB Ramps	37,280	35,260	-5%
9th Avenue			
5. Valley Pkwy to Auto Park Way	11,630	12,150	4%
Country Club Drive			
6. Auto Park Way to Hill Valley Dr	6,490	7,160	10%
County of San Diego Street Segments	Baseline 2014 Volumes (EIR Traffic Study)	Year 2017 Volumes (Validation Counts)	2017 Change over Baseline 2014
Country Club Drive			
7. Hill Valley Dr to Kauana Loa Dr	5,980	4,440	-26%
8. Kauana Loa Dr to Harmony Gr. Vill. Pkwy	3,260	2,260	-31%
9. Harmony Gr. Vill. Pkwy to Harmony Grove Rd	2,430	1,090	-55%
Harmony Grove Road			
10. Wilgen Dr to Country Club Dr	8,370	5,530	-34%
11. Country Club Dr to Harmony Gr. Vill. Pkwy	7,510	4,790	-36%
12. Harmony Gr. Vill. Pkwy to Kauana Loa Dr	5,890	3,370	-43%
13. Kauana Loa Dr to Enterprise St	7,310	4,190	-43%
Harmony Grove Village Parkway			
14. Harmony Grove Rd to Citracado Pkwy	8,220	4,310	-48%
Average Change System-wide from 2014 to 2017			-23%

24 Hour Segment Count

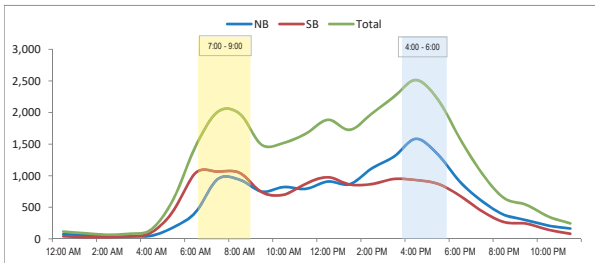
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(619) 987-5136



Location: 1. Auto Park Way btw Mission Road to Country Club Drive
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				28,238			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	75	41	116	12:00 PM - 1:00 PM	908	977	1,885
1:00 AM - 2:00 AM	60	28	88	1:00 PM - 2:00 PM	866	860	1,726
2:00 AM - 3:00 AM	38	29	67	2:00 PM - 3:00 PM	1,117	868	1,985
3:00 AM - 4:00 AM	42	39	81	3:00 PM - 4:00 PM	1,302	948	2,250
4:00 AM - 5:00 AM	50	102	152	4:00 PM - 5:00 PM	1,584	931	2,515
5:00 AM - 6:00 AM	185	450	635	5:00 PM - 6:00 PM	1,333	871	2,204
6:00 AM - 7:00 AM	423	1,045	1,468	6:00 PM - 7:00 PM	902	681	1,583
7:00 AM - 8:00 AM	946	1,065	2,011	7:00 PM - 8:00 PM	596	437	1,033
8:00 AM - 9:00 AM	936	1,045	1,981	8:00 PM - 9:00 PM	380	265	645
9:00 AM - 10:00 AM	748	740	1,488	9:00 PM - 10:00 PM	298	242	540
10:00 AM - 11:00 AM	821	699	1,520	10:00 PM - 11:00 PM	210	145	355
11:00 AM - 12:00 PM	792	873	1,665	11:00 PM - 12:00 AM	164	81	245
Total	5,116	6,156	11,272	Total	9,660	7,306	16,966

24-Hour NB Volume 14,776 24-Hour SB Volume 13,462



24 Hour Segment Count

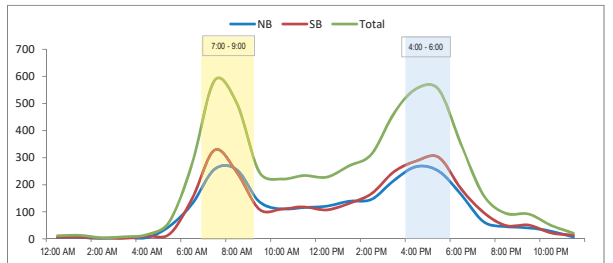
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(619) 987-5136



Location: 12. Citracado Parkway btw Avenida Del Diablo to Valley Parkway
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				5,326			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	6	6	12	12:00 PM - 1:00 PM	121	107	228
1:00 AM - 2:00 AM	6	7	13	1:00 PM - 2:00 PM	139	131	270
2:00 AM - 3:00 AM	2	2	4	2:00 PM - 3:00 PM	146	167	313
3:00 AM - 4:00 AM	6	2	8	3:00 PM - 4:00 PM	216	248	464
4:00 AM - 5:00 AM	5	11	16	4:00 PM - 5:00 PM	267	288	555
5:00 AM - 6:00 AM	47	18	65	5:00 PM - 6:00 PM	250	301	551
6:00 AM - 7:00 AM	129	148	277	6:00 PM - 7:00 PM	163	184	347
7:00 AM - 8:00 AM	257	328	585	7:00 PM - 8:00 PM	63	97	160
8:00 AM - 9:00 AM	255	245	500	8:00 PM - 9:00 PM	45	49	94
9:00 AM - 10:00 AM	137	109	246	9:00 PM - 10:00 PM	41	51	92
10:00 AM - 11:00 AM	111	110	221	10:00 PM - 11:00 PM	28	22	50
11:00 AM - 12:00 PM	116	118	234	11:00 PM - 12:00 AM	7	14	21
Total	1,077	1,104	2,181	Total	1,486	1,659	3,145

24-Hour NB Volume 2,563 24-Hour SB Volume 2,763



24 Hour Segment Count

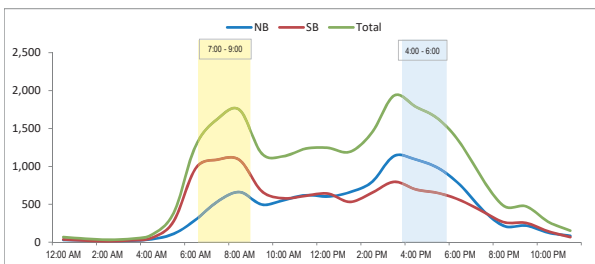
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Location: 13. Valley Parkway btw W. 11th Avenue to Avenida Del Diablo
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				21,619			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	31	37	68	12:00 PM - 1:00 PM	603	642	1,245
1:00 AM - 2:00 AM	25	22	47	1:00 PM - 2:00 PM	661	532	1,193
2:00 AM - 3:00 AM	19	13	32	2:00 PM - 3:00 PM	795	651	1,446
3:00 AM - 4:00 AM	20	25	45	3:00 PM - 4:00 PM	1,137	797	1,934
4:00 AM - 5:00 AM	40	57	97	4:00 PM - 5:00 PM	1,089	696	1,785
5:00 AM - 6:00 AM	110	275	385	5:00 PM - 6:00 PM	980	649	1,629
6:00 AM - 7:00 AM	297	975	1,272	6:00 PM - 7:00 PM	756	556	1,312
7:00 AM - 8:00 AM	538	1,090	1,628	7:00 PM - 8:00 PM	434	410	844
8:00 AM - 9:00 AM	662	1,083	1,745	8:00 PM - 9:00 PM	213	263	476
9:00 AM - 10:00 AM	497	673	1,170	9:00 PM - 10:00 PM	219	254	473
10:00 AM - 11:00 AM	555	580	1,135	10:00 PM - 11:00 PM	126	144	270
11:00 AM - 12:00 PM	622	613	1,235	11:00 PM - 12:00 AM	85	68	153
Total	3,416	5,443	8,859	Total	7,098	5,662	12,760

24-Hour NB Volume 10,514 24-Hour SB Volume 11,105



24 Hour Segment Count

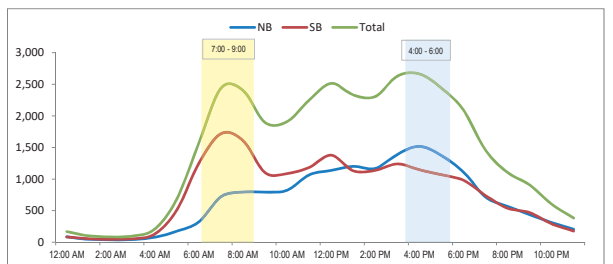
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(619) 987-5136



Location: 14. Valley Parkway btw Auto Park Way to I-15
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				35,264			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	86	83	169	12:00 PM - 1:00 PM	1,137	1,378	2,515
1:00 AM - 2:00 AM	45	56	101	1:00 PM - 2:00 PM	1,201	1,130	2,331
2:00 AM - 3:00 AM	40	46	86	2:00 PM - 3:00 PM	1,168	1,138	2,306
3:00 AM - 4:00 AM	42	56	98	3:00 PM - 4:00 PM	1,389	1,240	2,629
4:00 AM - 5:00 AM	79	131	210	4:00 PM - 5:00 PM	1,518	1,147	2,665
5:00 AM - 6:00 AM	175	513	688	5:00 PM - 6:00 PM	1,373	1,068	2,441
6:00 AM - 7:00 AM	323	1,254	1,577	6:00 PM - 7:00 PM	1,111	982	2,093
7:00 AM - 8:00 AM	721	1,719	2,440	7:00 PM - 8:00 PM	716	741	1,457
8:00 AM - 9:00 AM	794	1,608	2,402	8:00 PM - 9:00 PM	568	538	1,106
9:00 AM - 10:00 AM	794	1,101	1,895	9:00 PM - 10:00 PM	438	470	908
10:00 AM - 11:00 AM	823	1,087	1,910	10:00 PM - 11:00 PM	312	292	604
11:00 AM - 12:00 PM	1,066	1,184	2,250	11:00 PM - 12:00 AM	206	177	383
Total	4,988	8,838	13,826	Total	11,137	10,301	21,438

24-Hour NB Volume 16,125 24-Hour SB Volume 19,139



24 Hour Segment Count

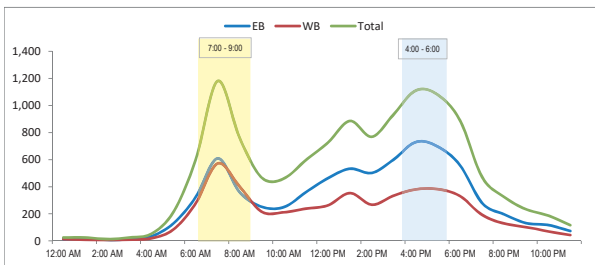
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Location: 15. W. 9th Avenue btw Valley Parkway to Auto Park Way
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				12,147			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	12	13	25	12:00 PM - 1:00 PM	463	262	725
1:00 AM - 2:00 AM	17	8	25	1:00 PM - 2:00 PM	533	353	886
2:00 AM - 3:00 AM	6	7	13	2:00 PM - 3:00 PM	502	267	769
3:00 AM - 4:00 AM	16	9	25	3:00 PM - 4:00 PM	603	335	938
4:00 AM - 5:00 AM	34	19	53	4:00 PM - 5:00 PM	731	381	1,112
5:00 AM - 6:00 AM	130	85	215	5:00 PM - 6:00 PM	696	382	1,078
6:00 AM - 7:00 AM	322	276	598	6:00 PM - 7:00 PM	558	331	889
7:00 AM - 8:00 AM	609	572	1,181	7:00 PM - 8:00 PM	279	192	471
8:00 AM - 9:00 AM	359	401	760	8:00 PM - 9:00 PM	196	126	324
9:00 AM - 10:00 AM	252	215	467	9:00 PM - 10:00 PM	131	102	233
10:00 AM - 11:00 AM	249	211	460	10:00 PM - 11:00 PM	117	70	187
11:00 AM - 12:00 PM	359	238	597	11:00 PM - 12:00 AM	73	43	116
Total	2,365	2,054	4,419	Total	4,882	2,846	7,728

24-Hour EB Volume 7,247 24-Hour WB Volume 4,900



24 Hour Segment Count

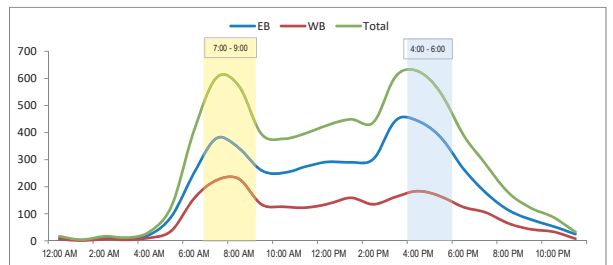
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Location: 2. Country Club Drive btw Auto Park Way to Hill Valley Drive
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				7,159			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	11	6	17	12:00 PM - 1:00 PM	292	137	429
1:00 AM - 2:00 AM	3	1	4	1:00 PM - 2:00 PM	290	159	449
2:00 AM - 3:00 AM	11	6	17	2:00 PM - 3:00 PM	303	135	438
3:00 AM - 4:00 AM	8	4	12	3:00 PM - 4:00 PM	446	163	609
4:00 AM - 5:00 AM	22	11	33	4:00 PM - 5:00 PM	442	184	626
5:00 AM - 6:00 AM	91	38	129	5:00 PM - 6:00 PM	382	164	546
6:00 AM - 7:00 AM	251	157	408	6:00 PM - 7:00 PM	267	125	392
7:00 AM - 8:00 AM	379	224	603	7:00 PM - 8:00 PM	178	105	283
8:00 AM - 9:00 AM	343	229	572	8:00 PM - 9:00 PM	114	65	179
9:00 AM - 10:00 AM	260	135	395	9:00 PM - 10:00 PM	79	43	122
10:00 AM - 11:00 AM	251	126	377	10:00 PM - 11:00 PM	54	34	88
11:00 AM - 12:00 PM	275	123	398	11:00 PM - 12:00 AM	25	8	33
Total	1,905	1,060	2,965	Total	2,872	1,322	4,194

24-Hour EB Volume 4,777 24-Hour WB Volume 2,382



24 Hour Segment Count

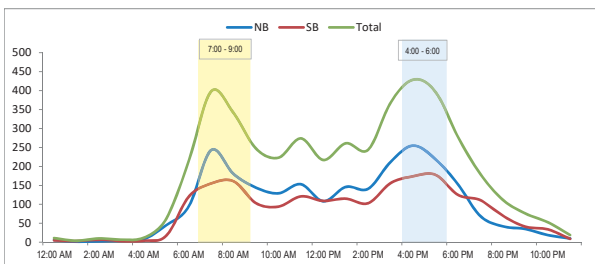
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(619) 987-5136



Location: 3. Country Club Drive btw Hill Valley Drive to Kauana Loa Drive
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				4,437			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	6	5	11	12:00 PM - 1:00 PM	108	109	217
1:00 AM - 2:00 AM	1	3	4	1:00 PM - 2:00 PM	146	115	261
2:00 AM - 3:00 AM	3	7	10	2:00 PM - 3:00 PM	141	103	244
3:00 AM - 4:00 AM	4	3	7	3:00 PM - 4:00 PM	212	156	368
4:00 AM - 5:00 AM	8	4	12	4:00 PM - 5:00 PM	255	174	429
5:00 AM - 6:00 AM	45	17	62	5:00 PM - 6:00 PM	219	178	397
6:00 AM - 7:00 AM	94	120	214	6:00 PM - 7:00 PM	153	125	278
7:00 AM - 8:00 AM	243	155	398	7:00 PM - 8:00 PM	69	111	180
8:00 AM - 9:00 AM	180	161	341	8:00 PM - 9:00 PM	42	70	112
9:00 AM - 10:00 AM	144	103	247	9:00 PM - 10:00 PM	35	41	76
10:00 AM - 11:00 AM	129	94	223	10:00 PM - 11:00 PM	19	34	53
11:00 AM - 12:00 PM	153	121	274	11:00 PM - 12:00 AM	10	9	19
Total	1,010	793	1,803	Total	1,409	1,225	2,634

24-Hour NB Volume 2,419 24-Hour SB Volume 2,018



24 Hour Segment Count

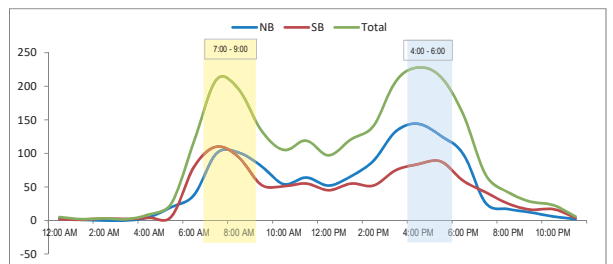
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info@accuratevideocontrols.com
(619) 987-5136



Location: 4. Country Club Drive btw Kauana Loa Drive to Harmony Grove Village Parkway
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				2,262			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	3	2	5	12:00 PM - 1:00 PM	52	45	97
1:00 AM - 2:00 AM	1	1	2	1:00 PM - 2:00 PM	66	55	121
2:00 AM - 3:00 AM	0	3	3	2:00 PM - 3:00 PM	89	52	141
3:00 AM - 4:00 AM	0	2	2	3:00 PM - 4:00 PM	133	75	208
4:00 AM - 5:00 AM	5	4	9	4:00 PM - 5:00 PM	144	84	228
5:00 AM - 6:00 AM	20	6	26	5:00 PM - 6:00 PM	126	88	214
6:00 AM - 7:00 AM	38	80	118	6:00 PM - 7:00 PM	99	59	158
7:00 AM - 8:00 AM	100	110	210	7:00 PM - 8:00 PM	26	42	68
8:00 AM - 9:00 AM	101	94	195	8:00 PM - 9:00 PM	17	25	42
9:00 AM - 10:00 AM	81	53	134	9:00 PM - 10:00 PM	12	16	28
10:00 AM - 11:00 AM	54	51	105	10:00 PM - 11:00 PM	6	17	23
11:00 AM - 12:00 PM	64	55	119	11:00 PM - 12:00 AM	2	4	6
Total	467	461	928	Total	772	562	1,334

24-Hour NB Volume 1,239 24-Hour SB Volume 1,023



24 Hour Segment Count

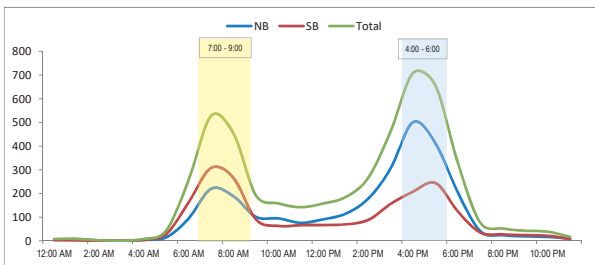
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Location: 8. Harmony Grove Road btw Harmony Grove Village Parkway to Country Club Drive
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				4,793			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	5	3	8	12:00 PM - 1:00 PM	91	67	158
1:00 AM - 2:00 AM	7	2	9	1:00 PM - 2:00 PM	115	70	185
2:00 AM - 3:00 AM	2	0	2	2:00 PM - 3:00 PM	178	88	266
3:00 AM - 4:00 AM	0	1	1	3:00 PM - 4:00 PM	306	156	462
4:00 AM - 5:00 AM	4	4	8	4:00 PM - 5:00 PM	501	208	709
5:00 AM - 6:00 AM	15	29	44	5:00 PM - 6:00 PM	412	244	656
6:00 AM - 7:00 AM	95	163	258	6:00 PM - 7:00 PM	204	124	328
7:00 AM - 8:00 AM	220	308	528	7:00 PM - 8:00 PM	41	35	76
8:00 AM - 9:00 AM	188	265	453	8:00 PM - 9:00 PM	24	28	52
9:00 AM - 10:00 AM	101	90	191	9:00 PM - 10:00 PM	19	24	43
10:00 AM - 11:00 AM	95	63	158	10:00 PM - 11:00 PM	17	22	39
11:00 AM - 12:00 PM	76	66	142	11:00 PM - 12:00 AM	10	7	17
Total	808	994	1,802	Total	1,918	1,073	2,991

24-Hour NB Volume 2,726 24-Hour SB Volume 2,067



24 Hour Segment Count

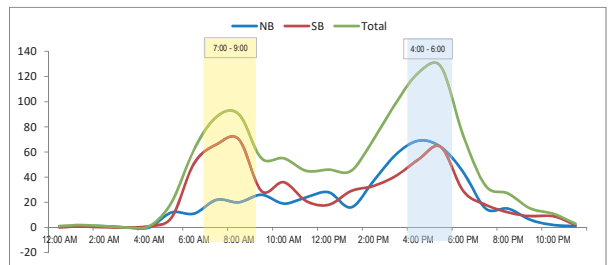
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(619) 987-5136



Location: 5. Country Club Drive btw Harmony Grove Village Parkway to Harmony Grove Road
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				1,093			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	1	0	1	12:00 PM - 1:00 PM	28	18	46
1:00 AM - 2:00 AM	1	1	2	1:00 PM - 2:00 PM	16	29	45
2:00 AM - 3:00 AM	1	0	1	2:00 PM - 3:00 PM	37	33	70
3:00 AM - 4:00 AM	0	0	0	3:00 PM - 4:00 PM	58	41	99
4:00 AM - 5:00 AM	0	1	1	4:00 PM - 5:00 PM	69	54	123
5:00 AM - 6:00 AM	12	8	20	5:00 PM - 6:00 PM	64	64	128
6:00 AM - 7:00 AM	11	51	62	6:00 PM - 7:00 PM	44	29	73
7:00 AM - 8:00 AM	22	66	88	7:00 PM - 8:00 PM	15	18	33
8:00 AM - 9:00 AM	20	70	90	8:00 PM - 9:00 PM	15	12	27
9:00 AM - 10:00 AM	26	29	55	9:00 PM - 10:00 PM	6	9	15
10:00 AM - 11:00 AM	19	36	55	10:00 PM - 11:00 PM	2	9	11
11:00 AM - 12:00 PM	24	21	45	11:00 PM - 12:00 AM	1	2	3
Total	137	283	420	Total	355	318	673

24-Hour NB Volume 492 24-Hour SB Volume 601



24 Hour Segment Count

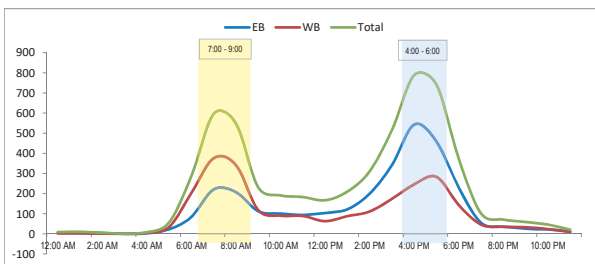
Accurate Video Counts Inc
info@accuratevideoengineers.com
(619) 987-5136



Location: 9. Harmony Grove Road btw Country Club Drive to Wilgen Drive
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				5,534			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	7	2	9	12:00 PM - 1:00 PM	104	63	167
1:00 AM - 2:00 AM	8	2	10	1:00 PM - 2:00 PM	122	88	210
2:00 AM - 3:00 AM	4	1	5	2:00 PM - 3:00 PM	200	111	311
3:00 AM - 4:00 AM	0	1	1	3:00 PM - 4:00 PM	342	174	516
4:00 AM - 5:00 AM	3	5	8	4:00 PM - 5:00 PM	543	246	789
5:00 AM - 6:00 AM	23	35	58	5:00 PM - 6:00 PM	458	283	741
6:00 AM - 7:00 AM	85	204	289	6:00 PM - 7:00 PM	230	143	373
7:00 AM - 8:00 AM	221	376	597	7:00 PM - 8:00 PM	55	46	101
8:00 AM - 9:00 AM	207	341	548	8:00 PM - 9:00 PM	36	35	71
9:00 AM - 10:00 AM	112	118	230	9:00 PM - 10:00 PM	26	33	59
10:00 AM - 11:00 AM	101	90	191	10:00 PM - 11:00 PM	22	24	46
11:00 AM - 12:00 PM	94	89	183	11:00 PM - 12:00 AM	12	9	21
Total	865	1,264	2,129	Total	2,150	1,255	3,405

24-Hour EB Volume 3,015 24-Hour WB Volume 2,519



24 Hour Segment Count

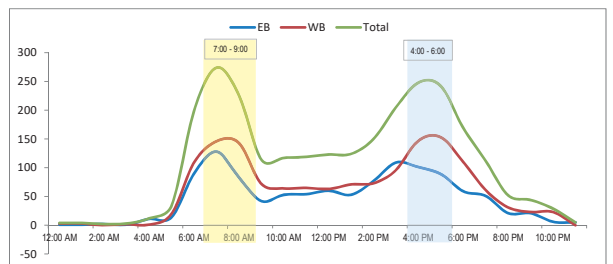
Accurate Video Counts Inc
info@accuratevideoengineers.com
(619) 987-5136



Location: 10. Harmony Grove Village Parkway btw Country Club Drive to Harmony Grove Road
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				2,611			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	1	3	4	12:00 PM - 1:00 PM	60	63	123
1:00 AM - 2:00 AM	1	3	4	1:00 PM - 2:00 PM	53	71	124
2:00 AM - 3:00 AM	2	0	2	2:00 PM - 3:00 PM	77	73	150
3:00 AM - 4:00 AM	1	2	3	3:00 PM - 4:00 PM	109	96	205
4:00 AM - 5:00 AM	11	1	12	4:00 PM - 5:00 PM	101	147	248
5:00 AM - 6:00 AM	14	20	34	5:00 PM - 6:00 PM	89	153	242
6:00 AM - 7:00 AM	90	109	199	6:00 PM - 7:00 PM	59	110	169
7:00 AM - 8:00 AM	128	146	274	7:00 PM - 8:00 PM	51	61	112
8:00 AM - 9:00 AM	83	143	226	8:00 PM - 9:00 PM	21	31	52
9:00 AM - 10:00 AM	42	72	114	9:00 PM - 10:00 PM	21	23	44
10:00 AM - 11:00 AM	53	64	117	10:00 PM - 11:00 PM	6	23	29
11:00 AM - 12:00 PM	54	65	119	11:00 PM - 12:00 AM	5	0	5
Total	480	628	1,108	Total	652	851	1,503

24-Hour EB Volume 1,132 24-Hour WB Volume 1,479



24 Hour Segment Count

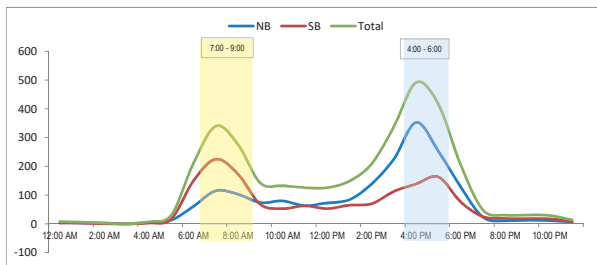
Accurate Video Counts Inc
info@accuratevideoengineers.com
(619) 987-5136



Location: 7. Harmony Grove Road btw Kauana Loa Drive to Harmony Grove Village Parkway
Orientation: North-South
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				3,369			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	5	3	8	12:00 PM - 1:00 PM	73	53	126
1:00 AM - 2:00 AM	3	3	6	1:00 PM - 2:00 PM	84	65	149
2:00 AM - 3:00 AM	3	0	3	2:00 PM - 3:00 PM	139	70	209
3:00 AM - 4:00 AM	0	0	0	3:00 PM - 4:00 PM	226	113	339
4:00 AM - 5:00 AM	5	3	8	4:00 PM - 5:00 PM	353	139	492
5:00 AM - 6:00 AM	13	17	30	5:00 PM - 6:00 PM	252	163	415
6:00 AM - 7:00 AM	61	150	211	6:00 PM - 7:00 PM	128	76	204
7:00 AM - 8:00 AM	115	225	340	7:00 PM - 8:00 PM	23	25	48
8:00 AM - 9:00 AM	103	173	276	8:00 PM - 9:00 PM	11	19	30
9:00 AM - 10:00 AM	74	68	142	9:00 PM - 10:00 PM	13	18	31
10:00 AM - 11:00 AM	80	53	133	10:00 PM - 11:00 PM	11	18	29
11:00 AM - 12:00 PM	63	63	126	11:00 PM - 12:00 PM	7	7	14
Total	525	758	1,283	Total	1,320	766	2,086

24-Hour NB Volume 1,845 24-Hour SB Volume 1,524



24 Hour Segment Count

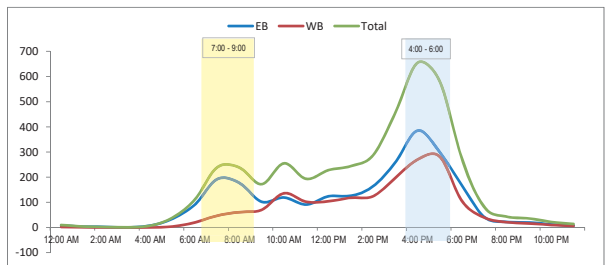
Accurate Video Counts Inc
info@accuratevideoengineers.com
(619) 987-5136



Location: 6. Harmony Grove Road btw Enterprise Street to Kauana Loa Drive
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				4,186			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	8	2	10	12:00 PM - 1:00 PM	124	104	228
1:00 AM - 2:00 AM	3	1	4	1:00 PM - 2:00 PM	126	118	244
2:00 AM - 3:00 AM	2	0	2	2:00 PM - 3:00 PM	163	124	287
3:00 AM - 4:00 AM	1	0	1	3:00 PM - 4:00 PM	259	197	456
4:00 AM - 5:00 AM	7	0	7	4:00 PM - 5:00 PM	385	270	655
5:00 AM - 6:00 AM	35	4	39	5:00 PM - 6:00 PM	299	281	580
6:00 AM - 7:00 AM	91	20	111	6:00 PM - 7:00 PM	166	104	270
7:00 AM - 8:00 AM	192	47	239	7:00 PM - 8:00 PM	41	39	80
8:00 AM - 9:00 AM	177	61	238	8:00 PM - 9:00 PM	22	21	43
9:00 AM - 10:00 AM	102	70	172	9:00 PM - 10:00 PM	20	16	36
10:00 AM - 11:00 AM	119	136	255	10:00 PM - 11:00 PM	12	10	22
11:00 AM - 12:00 PM	91	102	193	11:00 PM - 12:00 AM	8	6	14
Total	828	443	1,271	Total	1,625	1,290	2,915

24-Hour EB Volume 2,453 24-Hour WB Volume 1,733



24 Hour Segment Count

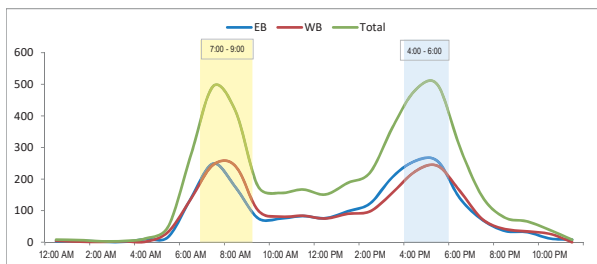
Accurate Video Counts Inc
info@accuratevideoengineers.com
(619) 987-5136



Location: 11. Harmony Grove Village Parkway btw Harmony Grove Road to Citracado Parkway
Orientation: East-West
Date of Count: Thursday, October 05, 2017
Analysts: DASH
Weather: Sunny
AVC Proj. No.: 17-0764

24 Hour Segment Volume				4,307			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	3	5	8	12:00 PM - 1:00 PM	76	75	151
1:00 AM - 2:00 AM	5	2	7	1:00 PM - 2:00 PM	98	90	188
2:00 AM - 3:00 AM	2	1	3	2:00 PM - 3:00 PM	123	98	221
3:00 AM - 4:00 AM	1	3	4	3:00 PM - 4:00 PM	207	157	364
4:00 AM - 5:00 AM	10	2	12	4:00 PM - 5:00 PM	257	224	481
5:00 AM - 6:00 AM	17	33	50	5:00 PM - 6:00 PM	257	242	499
6:00 AM - 7:00 AM	138	136	274	6:00 PM - 7:00 PM	139	162	301
7:00 AM - 8:00 AM	249	245	494	7:00 PM - 8:00 PM	71	73	144
8:00 AM - 9:00 AM	174	241	415	8:00 PM - 9:00 PM	36	42	78
9:00 AM - 10:00 AM	76	101	177	9:00 PM - 10:00 PM	32	34	66
10:00 AM - 11:00 AM	75	81	156	10:00 PM - 11:00 PM	12	27	39
11:00 AM - 12:00 PM	83	84	167	11:00 PM - 12:00 AM	8	0	8
Total	833	934	1,767	Total	1,316	1,224	2,540

24-Hour EB Volume 2,149 24-Hour WB Volume 2,158



ATTACHMENT B
BASLINE FREEWAYS VOLUMES VALIDATION

BASELINE 2014 TO YEAR 2017 EXISTING FREEWAY COUNTS COMPARISON

Freeway and Segment	Baseline 2014 Volumes (EIR Traffic Study)	Year 2017 Volumes (Validation Counts)	2017 Change over Baseline 2014
SR 78			
West of Nordahl Road	159,000	145,900	-8%
East of Nordahl Road	164,000	174,450	6%
<i>Average Change from 2014 to 2017</i>			-1%

Source: Caltrans Performance System Measurement (PeMS), October 2017

SR 78 EB	Sample Time	1108702 Lane 1 Flow	1108702 Lane 2 Flow	1108702 Lane 3 Flow	Total
W/O Nordahl PM 14.86	10/24/2017 0:00	85	250	150	485
	10/24/2017 1:00	42	176	120	338
	10/24/2017 2:00	42	124	89	255
	10/24/2017 3:00	44	147	134	325
	10/24/2017 4:00	155	356	269	780
	10/24/2017 5:00	686	895	722	2303
	10/24/2017 6:00	1500	1334	969	3803
	10/24/2017 7:00	1442	1227	876	3545
	10/24/2017 8:00	1637	1347	1034	4018
	10/24/2017 9:00	1560	1459	1158	4177
	10/24/2017 10:00	1271	1353	1229	3853
	10/24/2017 11:00	1325	1350	1277	3952
	10/24/2017 12:00	1404	1394	1273	4071
	10/24/2017 13:00	1561	1487	1261	4309
	10/24/2017 14:00	1699	1462	1363	4524
	10/24/2017 15:00	1707	1483	1335	4525
	10/24/2017 16:00	1679	1469	1250	4398
	10/24/2017 17:00	1689	1531	1280	4500
	10/24/2017 18:00	1737	1501	1325	4563
	10/24/2017 19:00	1214	1264	1014	3492
	10/24/2017 20:00	957	1035	903	2895
	10/24/2017 21:00	740	879	733	2352
	10/24/2017 22:00	455	618	452	1525
	10/24/2017 23:00	239	412	296	947

69935

SR 78 WB	Sample Time	1108704 Lane 1 Flow	1108704 Lane 2 Flow	1108704 Lane 3 Flow	Total
W/O Nordahl PM 15.37	10/24/2017 0:00	1	6	407	414
	10/24/2017 1:00	4	3	286	293
	10/24/2017 2:00	2	6	276	284
	10/24/2017 3:00	179	74	234	487
	10/24/2017 4:00	477	303	379	1159
	10/24/2017 5:00	1273	1315	989	3577
	10/24/2017 6:00	1775	1901	1458	5134
	10/24/2017 7:00	1752	1908	1332	4992
	10/24/2017 8:00	1676	1878	1414	4968
	10/24/2017 9:00	1679	1801	1423	4903
	10/24/2017 10:00	1497	1664	1211	4372
	10/24/2017 11:00	1497	1249	1384	4130
	10/24/2017 12:00	1573	1361	1470	4404
	10/24/2017 13:00	1530	1447	1408	4385
	10/24/2017 14:00	1654	1612	1458	4724
	10/24/2017 15:00	1598	1730	1351	4679
	10/24/2017 16:00	1541	1660	1242	4443
	10/24/2017 17:00	1529	1630	1268	4427
	10/24/2017 18:00	1428	1386	1298	4112
	10/24/2017 19:00	1119	927	1116	3162
	10/24/2017 20:00	923	634	969	2526
	10/24/2017 21:00	825	477	826	2128
	10/24/2017 22:00	639	279	559	1477
	10/24/2017 23:00	310	121	364	795

75975

TOTAL MAINLINE VOLUMES:	145910

SR 78 EB	Sample Time	1126016 Lane 1 Flow	1126016 Lane 2 Flow	1126016 Lane 3 Flow	1126016 Lane 4 Flow	Total
E/O Nordahl PM 15.915	10/24/2017 0:00	81	166	249	86	582
	10/24/2017 1:00	49	128	177	60	414
	10/24/2017 2:00	39	86	147	64	336
	10/24/2017 3:00	29	83	214	74	400
	10/24/2017 4:00	59	145	568	175	947
	10/24/2017 5:00	210	407	1408	686	2711
	10/24/2017 6:00	945	558	1529	1476	4508
	10/24/2017 7:00	1393	664	1340	1416	4813
	10/24/2017 8:00	1309	768	1470	1448	4995
	10/24/2017 9:00	1022	872	1975	1360	5229
	10/24/2017 10:00	764	980	1887	1266	4897
	10/24/2017 11:00	829	1071	1806	1334	5040
	10/24/2017 12:00	913	1100	1948	1394	5355
	10/24/2017 13:00	1016	1163	1935	1355	5469
	10/24/2017 14:00	1257	1196	2234	1506	6193
	10/24/2017 15:00	1347	1157	2159	1627	6290
	10/24/2017 16:00	1470	1235	2170	1527	6402
	10/24/2017 17:00	1450	1335	2226	1412	6423
	10/24/2017 18:00	1316	1248	2115	1298	5977
	10/24/2017 19:00	895	1056	1712	953	4616
	10/24/2017 20:00	727	812	1428	739	3706
	10/24/2017 21:00	524	661	1161	554	2900
	10/24/2017 22:00	349	423	737	355	1864
	10/24/2017 23:00	212	291	451	195	1149

91216

SR 78 WB	Sample Time	1126022 Lane 1 Flow	1126022 Lane 2 Flow	1126022 Lane 3 Flow	1126022 Lane 4 Flow	Total
E/O Nordahl PM 15.9915	10/24/2017 0:00	11	5	269	166	451
	10/24/2017 1:00	3	9	181	141	334
	10/24/2017 2:00	6	4	183	116	309
	10/24/2017 3:00	74	135	212	119	540
	10/24/2017 4:00	307	377	405	215	1304
	10/24/2017 5:00	1132	1167	1059	619	3977
	10/24/2017 6:00	1664	1456	1360	1106	5586
	10/24/2017 7:00	1639	1142	1233	1215	5229
	10/24/2017 8:00	1606	1140	1181	1244	5171
	10/24/2017 9:00	1641	1259	1224	1195	5319
	10/24/2017 10:00	1437	1182	1203	1044	4866
	10/24/2017 11:00	1090	1197	1303	1032	4622
	10/24/2017 12:00	1203	1344	1351	1067	4965
	10/24/2017 13:00	1226	1319	1364	987	4896
	10/24/2017 14:00	1355	1391	1386	1058	5190
	10/24/2017 15:00	1437	1365	1259	1118	5179
	10/24/2017 16:00	1441	1158	1143	1111	4853
	10/24/2017 17:00	1406	1152	1098	1104	4760
	10/24/2017 18:00	1122	1154	1273	918	4467
	10/24/2017 19:00	765	939	1119	735	3558
	10/24/2017 20:00	539	748	921	573	2781
	10/24/2017 21:00	455	661	789	461	2366
	10/24/2017 22:00	324	462	536	300	1622
	10/24/2017 23:00	140	250	316	183	889

83234

TOTAL MAINLINE VOLUMES:	174450

ATTACHMENT C

REVISED TRIP ASSIGNMENT TO AUTO PARK WAY/ I-15 SOUTHBOUND RAMPS INTERSECTION

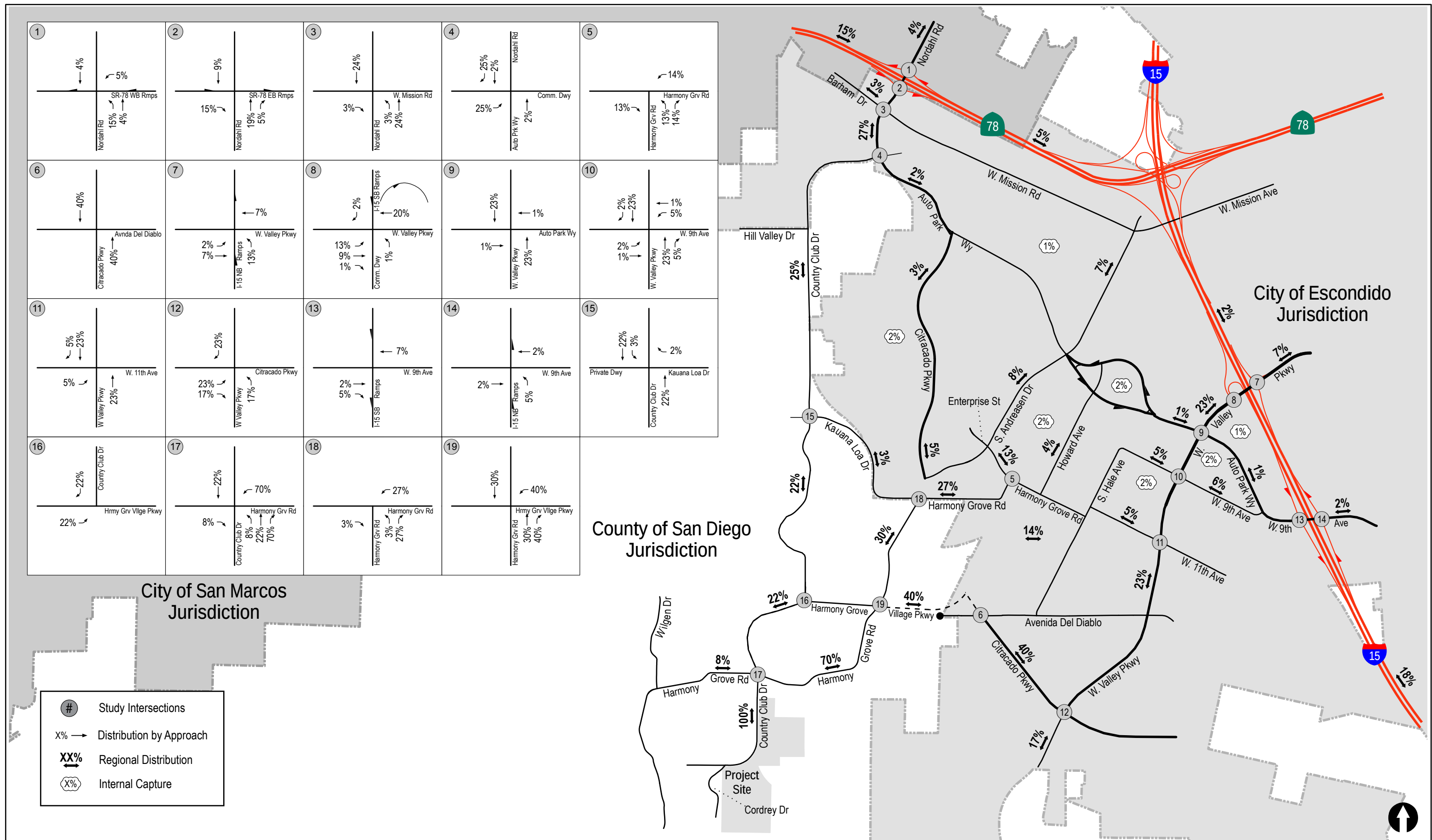
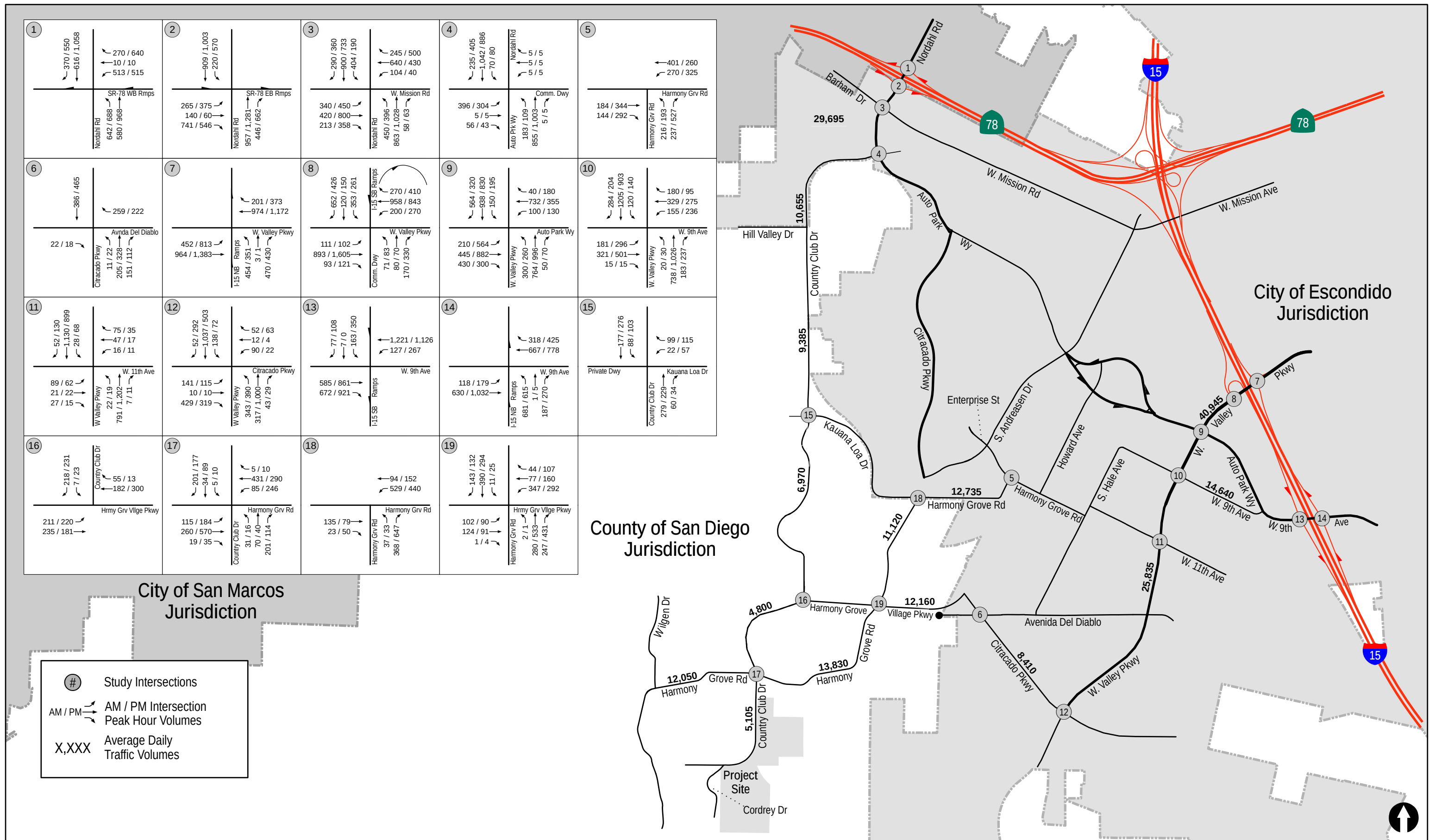


Figure 7-1

Project Traffic Distribution

HARMONY GROVE PARCEL



AUTO PARKWAY WAY/ INTERSTATE 15
NEAR-TERM INTERSECTION OPERATIONS (HCM 2000)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c	
1. Auto Park Way / I-15 SB Ramps	City	Signal	AM	17.7	B	18.1	B	0.4	19.1	B	19.6	B	0.5	None
			PM	24.1	C	24.2	C	0.1	27.1	C	27.4	C	0.3	
2. Auto Park Way / I-15 NB Ramps	City	Signal	AM	21.9	C	22.0	C	0.1	22.5	C	22.6	C	0.1	None
			PM	21.0	C	21.2	C	0.2	21.7	C	21.9	C	0.2	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. “Δ” denotes the Project-induced increase in delay for intersections located in the City of Escondido. “Δ” denotes the Project-induced increase in delay for signalized intersections and Project traffic added to the critical movement for unsignalized intersections located in the County of San Diego.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F



Existing + Proj AM
13: I-15 SB Ramps & Auto Park Way

Harmony Grove Parcel
05/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	557	641	121	1163	0	0	0	0	155	7	73
Future Volume (vph)	0	557	641	121	1163	0	0	0	0	155	7	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1467	1687	3374					1603	1615	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1467	1687	3374					1603	1615	1509
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	714	682	175	1352	0	0	0	0	199	12	96
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	61
Lane Group Flow (vph)	0	714	682	175	1352	0	0	0	0	105	106	35
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type	NA	Perm	Prot	NA	NA	Split	NA	custom				
Protected Phases	2		1	6		4	4	4	5			
Permitted Phases		2										
Actuated Green, G (s)	46.5	46.5	13.3	55.9		11.4	11.4	20.1				
Effective Green, g (s)	46.5	46.5	13.3	55.9		11.4	11.4	20.1				
Actuated g/C Ratio	0.55	0.55	0.16	0.66		0.13	0.13	0.24				
Clearance Time (s)	5.0	5.0	4.2	5.0		4.6	4.6					
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0					
Lane Grp Cap (vph)	1845	802	263	2218		214	216	356				
v/s Ratio Prot	0.21		c0.10	0.40		0.07	c0.07	0.02				
v/s Ratio Perm		c0.46										
v/c Ratio	0.39	0.85	0.67	0.61		0.49	0.49	0.10				
Uniform Delay, d1	11.1	16.3	33.8	8.3		34.1	34.1	25.4				
Progression Factor	1.00	1.00	1.11	1.12		1.00	1.00	1.00				
Incremental Delay, d2	0.6	11.0	5.5	1.0		1.8	1.8	0.1				
Delay (s)	11.7	27.3	43.0	10.3		35.9	35.9	25.5				
Level of Service	B	C	D	B		D	D	C				
Approach Delay (s)	19.3			14.0		0.0		32.6				
Approach LOS	B			B		A		C				
Intersection Summary												
HCM 2000 Control Delay		18.1				HCM 2000 Level of Service		B				
HCM 2000 Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		85.0				Sum of lost time (s)		13.8				
Intersection Capacity Utilization		90.5%				ICU Level of Service		E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
N:\2314\Analysis\Intersections\HCM 2000 Rev Vols\Existing + Proj AM.syn
Synchro 10 Report

Existing + Proj PM
13: I-15 SB Ramps & Auto Park Way

Harmony Grove Parcel
05/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	820	877	254	1073	0	0	0	0	333	0	103
Future Volume (vph)	0	820	877	254	1073	0	0	0	0	333	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1456	1687	3374					1603	1603	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1456	1687	3374					1603	1603	1509
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83
Adj. Flow (vph)	0	854	914	306	1206	0	0	0	0	374	0	124
RTOR Reduction (vph)	0	0	377	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	0	854	337	306	1206	0	0	0	0	187	187	66
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type	NA	Perm	Prot	NA		Split	NA	custom				
Protected Phases	2		1	6		4	4	4	5			
Permitted Phases		2										
Actuated Green, G (s)	38.4	38.4	18.0	52.8		14.8	14.8	23.2				
Effective Green, g (s)	38.4	38.4	18.0	52.8		14.8	14.8	23.2				
Actuated g/C Ratio	0.45	0.45	0.21	0.62		0.17	0.17	0.27				
Clearance Time (s)	5.0	5.0	4.2	5.0		4.6	4.6					
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0					
Lane Grp Cap (vph)	1524	657	357	2095		279	279	411				
v/s Ratio Prot	0.25		c0.18	0.36		c0.12	0.12	0.04				
v/s Ratio Perm		c0.37										
v/c Ratio	0.56	0.82	0.86	0.58		0.67	0.67	0.16				
Uniform Delay, d1	17.1	20.3	32.3	9.5		32.8	32.8	23.5				
Progression Factor	1.00	1.00	1.19	1.06		1.00	1.00	1.00				
Incremental Delay, d2	1.5	10.9	15.4	0.9		6.2	6.2	0.2				
Delay (s)	18.6	31.1	53.7	11.0		39.0	39.0	23.7				
Level of Service	B	C	D	B		D	D	C				
Approach Delay (s)	25.1			19.7		0.0		35.2				
Approach LOS	C			B		A		D				
Intersection Summary												
HCM 2000 Control Delay		24.2				HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		85.0				Sum of lost time (s)		13.8				
Intersection Capacity Utilization		89.8%				ICU Level of Service		E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
N:\2314\Analysis\Intersections\HCM 2000 Rev Vols\Existing + Proj PM.syn
Synchro 10 Report

Existing + Proj AM
14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Harmony Grove Parcel
05/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	600	0	0	635	303	649	1	178	0	0	0
Future Volume (vph)	112	600	0	0	635	303	649	1	178	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	137	750	0	0	722	344	782	4	241	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	200	0	0	117	0	0	0
Lane Group Flow (vph)	137	750	0	0	722	144	391	395	124	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	8.9	48.7			35.6	35.6	26.7	26.7	26.7			
Effective Green, g (s)	8.9	48.7			35.6	35.6	26.7	26.7	26.7			
Actuated g/C Ratio	0.10	0.57			0.42	0.42	0.31	0.31	0.31			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	342	1933			1413	618	503	504	474			
v/s Ratio Prot	0.04	c0.22			c0.21		0.24	c0.25				
v/s Ratio Perm						0.10		0.08				
v/c Ratio	0.40	0.39			0.51	0.23	0.78	0.78	0.26			
Uniform Delay, d1	35.6	10.0			18.3	15.9	26.5	26.5	21.8			
Progression Factor	1.63	0.80			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.6			0.3	0.2	7.4	7.8	0.3			
Delay (s)	58.7	8.5			18.6	16.1	33.9	34.3	22.1			
Level of Service	E	A			B	B	C	C	C			
Approach Delay (s)		16.3				17.8		31.3			0.0	
Approach LOS		B				B		C			A	
Intersection Summary												
HCM 2000 Control Delay			22.0		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			85.0		Sum of lost time (s)					13.8		
Intersection Capacity Utilization			90.5%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
13: I-15 SB Ramps & Auto Park WayHarmony Grove Parcel
05/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	585	672	127	1221	0	0	0	0	163	7	77
Future Volume (vph)	0	585	672	127	1221	0	0	0	0	163	7	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.2	5.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.95	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3374	1467	1687	3374	1603	1615	1509	1603	1615	1509	1603	1603
Flt Permitted	1.00	1.00	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3374	1467	1687	3374	1603	1615	1509	1603	1615	1509	1603	1603
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	750	715	184	1420	0	0	0	0	209	12	101
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	61
Lane Group Flow (vph)	0	750	715	184	1420	0	0	0	0	111	110	40
Confl. Peds. (#/hr)	11											
Confl. Bikes (#/hr)	4											
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type	NA	Perm	Prot	NA	Split	NA	custom	Split	NA	custom	Split	NA
Protected Phases	2	2	1	6	4	4	4	4	4	4	4	4
Permitted Phases	2	2	1	6	4	4	4	4	4	4	4	4
Actuated Green, G (s)	46.0	46.0	13.6	55.7	11.6	11.6	20.3	11.6	11.6	20.3	15.0	15.0
Effective Green, g (s)	46.0	46.0	13.6	55.7	11.6	11.6	20.3	11.6	11.6	20.3	15.0	15.0
Actuated g/C Ratio	0.54	0.54	0.16	0.66	0.14	0.14	0.24	0.14	0.14	0.24	0.18	0.18
Clearance Time (s)	5.0	5.0	4.2	5.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1825	793	269	2210	218	220	360	218	220	360	282	282
v/s Ratio Prot	0.22		c0.11	0.42	c0.07	0.07	0.03	0.22	c0.07	0.07	0.03	0.03
v/s Ratio Perm		c0.49										
v/c Ratio	0.41	0.90	0.68	0.64	0.51	0.50	0.11	0.41	0.90	0.68	0.70	0.70
Uniform Delay, d1	11.5	17.5	33.7	8.7	34.1	34.0	25.3	11.5	17.5	33.7	32.9	32.9
Progression Factor	1.00	1.00	1.11	1.11	1.00	1.00	1.00	1.00	1.00	1.11	1.00	1.00
Incremental Delay, d2	0.7	15.4	6.1	1.1	1.9	1.8	0.1	0.7	15.4	6.1	7.2	7.4
Delay (s)	12.2	32.9	43.4	10.8	35.9	35.8	25.4	12.2	32.9	43.4	40.1	40.2
Level of Service	B	C	D	B	D	D	C	B	C	D	D	C
Approach Delay (s)	22.3			14.6	0.0	32.6		22.3			35.8	
Approach LOS	C			B	A	C		C			D	
Intersection Summary												
HCM 2000 Control Delay	19.6			HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	85.0			Sum of lost time (s)						13.8		
Intersection Capacity Utilization	94.2%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
N:\2314\Analysis\Intersections\HCM 2000 Rev Vols\Existing + Cuml + Proj AM.syn

Synchro 10 Report

Existing + Cuml Proj + Project PM
13: I-15 SB Ramps & Auto Park WayHarmony Grove Parcel
05/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	0	861	921	267	1126	0	0	0	0	350	0	108	
Future Volume (vph)	0	861	921	267	1126	0	0	0	0	350	0	108	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0	4.2	5.0						4.6	4.6	4.6	
Lane Util. Factor	0.95	1.00	1.00	0.95						0.95	0.95	1.00	
Frpb, ped/bikes	1.00	0.96	1.00	1.00						1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00						1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00						1.00	1.00	0.85	
Flt Protected	1.00	1.00	0.95	1.00						0.95	0.95	1.00	
Satd. Flow (prot)	3374	1456	1687	3374						1603	1603	1509	
Flt Permitted	1.00	1.00	0.95	1.00						0.95	0.95	1.00	
Satd. Flow (perm)	3374	1456	1687	3374						1603	1603	1509	
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83	
Adj. Flow (vph)	0	897	959	322	1265	0	0	0	0	393	0	130	
RTOR Reduction (vph)	0	0	379	0	0	0	0	0	0	0	0	57	
Lane Group Flow (vph)	0	897	580	322	1265	0	0	0	0	196	197	73	
Confl. Peds. (#/hr)	7												
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%	
Turn Type	NA	Perm	Prot	NA						Split	NA	custom	
Protected Phases	2			1	6						4	4	5
Permitted Phases	2												
Actuated Green, G (s)	37.6	37.6	18.6	51.5						15.0	15.0	24.5	
Effective Green, g (s)	37.6	37.6	18.6	51.5						15.0	15.0	24.5	
Actuated g/C Ratio	0.44	0.44	0.22	0.61						0.18	0.18	0.29	
Clearance Time (s)	5.0	5.0	4.2	5.0						4.6	4.6	4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0						3.0	3.0		
Lane Grp Cap (vph)	1492	644	369	2044						282	282	434	
v/s Ratio Prot	0.27			c0.19	0.37						0.12	c0.12	0.05
v/s Ratio Perm	c0.40												
v/c Ratio	0.60	0.90	0.87	0.62						0.70	0.70	0.17	
Uniform Delay, d1	18.0	22.0	32.1	10.6						32.9	32.9	22.6	
Progression Factor	1.00	1.00	1.18	1.11						1.00	1.00	1.00	
Incremental Delay, d2	1.8	18.0	16.4	1.1						7.2	7.4	0.2	
Delay (s)	19.8	40.0	54.2	12.8						40.1	40.2	22.8	
Level of Service	B	D	D	B						D	D	C	
Approach Delay (s)	30.2				21.2	0.0			35.8				
Approach LOS	C				C	A			D				
Intersection Summary													
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service					C						
HCM 2000 Volume to Capacity ratio	0.85												
Actuated Cycle Length (s)	85.0	Sum of lost time (s)					13.8						
Intersection Capacity Utilization	93.8%	ICU Level of Service					F						
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
N:\2314\Analysis\Intersections\HCM 2000 Rev Vols\Existing + Cuml + Proj PM.syn

Synchro 10 Report

Existing + Cuml Proj + Project AM
14: I-15 NB Ramps & Auto Park Way/W 9th AveHarmony Grove Parcel
05/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	630	0	0	667	318	681	1	187	0	0	0
Future Volume (vph)	118	630	0	0	667	318	681	1	187	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Fr	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
FR Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
FR Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	144	788	0	0	758	361	820	4	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	213	0	0	105	0	0	0
Lane Group Flow (vph)	144	788	0	0	758	148	410	414	148	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	9.1	48.1			34.8	34.8	27.3	27.3	27.3			
Effective Green, g (s)	9.1	48.1			34.8	34.8	27.3	27.3	27.3			
Actuated g/C Ratio	0.11	0.57			0.41	0.41	0.32	0.32	0.32			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	350	1909			1381	604	514	516	484			
v/s Ratio Prot	0.04	0.23			0.22		0.26	0.26				
v/s Ratio Perm						0.10			0.10			
v/c Ratio	0.41	0.41			0.55	0.24	0.80	0.80	0.31			
Uniform Delay, d1	35.4	10.5			19.1	16.5	26.3	26.4	21.7			
Progression Factor	1.64	0.79			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.6			0.4	0.2	8.4	8.8	4.1			
Delay (s)	58.8	8.9			19.6	16.7	34.7	35.1	22.1			
Level of Service	E	A			B	B	C	D	C			
Approach Delay (s)		16.6			18.6		31.9				0.0	
Approach LOS		B			B		C				A	
Intersection Summary												
HCM 2000 Control Delay	22.6				HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	85.0				Sum of lost time (s)				13.8			
Intersection Capacity Utilization	94.2%				ICU Level of Service				F			
Analysis Period (min)	15											
c Critical Lane Group												

AUTO PARKWAY WAY/ INTERSTATE 15
NEAR-TERM INTERSECTION OPERATIONS (HCM 2010)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c	
1. Auto Park Way / I-15 SB Ramps	City	Signal	AM	13.0	B	13.2	B	0.2	14.1	B	14.2	B	0.1	None
			PM	47.2	D	48.0	D	0.8	49.8	D	49.9	D	0.1	
2. Auto Park Way / I-15 NB Ramps	City	Signal	AM	17.9	B	17.9	B	0.0	20.6	C	20.7	C	0.1	None
			PM	16.9	C	17.1	B	0.2	20.2	C	20.4	C	0.2	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. “Δ” denotes the Project-induced increase in delay for intersections located in the City of Escondido. “Δ” denotes the Project-induced increase in delay for signalized intersections and Project traffic added to the critical movement for unsignalized intersections located in the County of San Diego.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

HCM 2010 Signalized Intersection Summary
13: I-15 SB Ramps & Auto Park Way

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	0	557	641	121	1163	0	0	0	0	155	7	73
Future Volume (veh/h)	0	557	641	121	1163	0	0	0	0	155	7	73
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	714	682	175	1352	0				208	0	96
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	2081	914	214	2675	0				318	0	142
Arrive On Green	0.00	0.62	0.62	0.13	0.79	0.00				0.09	0.00	0.09
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	714	682	175	1352	0				208	0	96
Grp Sat Flow(s), veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509
Q Serve(g, s), s	0.0	8.7	27.8	8.6	11.8	0.0				5.0	0.0	5.2
Cycle Q Clear(g, c), s	0.0	8.7	27.8	8.6	11.8	0.0				5.0	0.0	5.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00	1.00	
Lane Grp Cap(c), veh/h	0	2081	914	214	2675	0				318	0	142
V/C Ratio(X)	0.00	0.34	0.75	0.82	0.51	0.00				0.65	0.00	0.68
Avail Cap(c, a), veh/h	0	2081	914	314	2675	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.76	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.9	11.6	36.2	3.0	0.0				37.2	0.0	37.2
Incr Delay (d2), s/veh	0.0	0.5	5.5	7.9	0.5	0.0				2.3	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	4.2	12.6	4.5	5.5	0.0				2.5	0.0	2.4
LnGrp Delay(d), s/veh	0.0	8.4	17.1	44.1	3.6	0.0				39.4	0.0	42.8
LnGrp LOS		A	B	D	A					D		D
Approach Vol, veh/h	1396				1527					304		
Approach Delay, s/veh	12.6				8.2					40.5		
Approach LOS	B				A					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	57.4			12.6		72.4						
Change Period (Y+Rc), s	4.2			4.6		5.0						
Max Green Setting (Gmax), s	37.4			18.0		49.4						
Max Q Clear Time (g, c+H), s	29.8			7.2		13.8						
Green Ext Time (p, c), s	0.2			4.5		0.8						
Intersection Summary												
HCM 2010 Ctrl Delay	13.2											
HCM 2010 LOS	B											
Notes												

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	112	600	0	0	635	303	649	1	178	0	0	0
Future Volume (veh/h)	112	600	0	0	635	303	649	1	178	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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
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
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776	1776	1776	1776
Adj Flow Rate, veh/h	137	750	0	0	722	344	785	0	241			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74			
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			
Cap, veh/h	218	2056	0	0	1666	742	939	0	419			
Arrive On Green	0.13	1.00	0.00	0.00	0.49	0.49	0.28	0.00	0.28			
Sat Flow, veh/h	3281	3463	0	0	3463	1503	382	0	1509			
Grp Volume(v), veh/h	137	750	0	0	722	344	785	0	241			
Grp Sat Flow(s), veh/h/ln	1687	0	0	0	1687	1503	1691	0	1509			
Q Serve(g, s), s	3.4	0.0	0.0	0.0	11.7	12.8	18.6	0.0	11.7			
Cycle Q Clear(g, c), s	3.4	0.0	0.0	0.0	11.7	12.8	18.6	0.0	11.7			
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Lane Grp Cap(c), veh/h	218	2056	0	0	1666	742	939	0	419			
V/C Ratio(X)	0.63	0.36	0.00	0.00	0.43	0.46	0.84	0.00	0.58			
Avail Cap(c, a), veh/h	610	2056	0	0	1666	742	1210	0	540			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	35.9	0.0	0.0	0.0	13.9	14.1	28.9	0.0	26.4			
Incr Delay (d2), s/veh	2.8	0.5	0.0	0.0	11.2	0.5	4.2	0.0	1.2			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/h	1.6	0.1	0.0	0.0	5.5	5.3	9.2	0.0	5.0			
LnGrp Delay(d), s/veh	38.6	0.5	0.0	0.0	14.0	14.6	33.0	0.0	27.6			
LnGrp LOS	D	A			B	B	C		C			
Approach Vol, veh/h	887				1066				1026			
Approach Delay, s/veh	6.4				14.2				31.8			
Approach LOS	A				B				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6	8					
Phs Duration (G+Y+Rc), s		56.8			9.8	47.0	28.2					
Change Period (Y+Rc), s		5.0			4.2	5.0	4.6					
Max Green Setting (Gmax), s		45.0			11.6	25.0	30.4					
Max Q Clear Time (g, c+H), s		2.0			5.4	14.8	20.6					
Green Ext Time (p, c), s		6.3			0.3	4.5	3.0					
Intersection Summary												
HCM 2010 Ctrl Delay		17.9										
HCM 2010 LOS		B										
Notes												

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
13: I-15 SB Ramps & Auto Park Way

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	820	877	254	1073	0	0	0	0	333	0	103
Future Volume (veh/h)	0	820	877	254	1073	0	0	0	0	333	0	103
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	854	914	306	1206	0				374	0	124
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.96	0.96	0.83	0.89	0.92				0.89	0.92	0.83
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	1665	740	340	2510	0				484	0	216
Arrive On Green	0.00	0.49	0.49	0.20	0.74	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	3463	1499	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	854	914	306	1206	0				374	0	124
Grp Sat Flow(s),veh/h/ln	0	1687	1499	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	14.6	42.0	15.0	12.1	0.0				9.1	0.0	6.5
Cycle Q Clear(g_c), s	0.0	14.6	42.0	15.0	12.1	0.0				9.1	0.0	6.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00	1.00	
Lane Grp Cap(c), veh/h	0	1665	740	340	2510	0				484	0	216
V/C Ratio(X)	0.00	0.51	1.24	0.90	0.48	0.00				0.77	0.00	0.57
Avail Cap(c_a), veh/h	0	1665	740	354	2510	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.74	0.74	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.6	21.5	33.1	4.3	0.0				35.1	0.0	34.0
Incr Delay (d2), s/veh	0.0	1.1	11.7	19.4	0.5	0.0				3.1	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/h	0.0	7.0	41.4	8.8	5.7	0.0				4.4	0.0	2.9
LnGrp Delay(d),s/veh	0.0	15.7	139.1	52.6	4.8	0.0				38.2	0.0	36.4
LnGrp LOS		B	F	D	A					D		D
Approach Vol, veh/h	1768				1512					498		
Approach Delay, s/veh	79.5				14.5					37.7		
Approach LOS	E				B					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.3	47.0		16.8		68.2						
Change Period (Y+Rc), s	4.2	5.0		4.6		5.0						
Max Green Setting (Gmax), s	35.4			18.0		49.4						
Max Q Clear Time (g_c+H), s	44.0			11.1		14.1						
Green Ext Time (p_c), s	0.1	0.0		1.1		11.6						
Intersection Summary												
HCM 2010 Ctrl Delay	48.0											
HCM 2010 LOS	D											
Notes												

Existing + Cuml Proj + Project AM
13: I-15 SB Ramps & Auto Park WayHarmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	0	585	672	127	1221	0	0	0	0	163	7	77
Future Volume (veh/h)	0	585	672	127	1221	0	0	0	0	163	7	77
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	750	715	184	1420	0				218	0	101
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	2051	900	223	2663	0				330	0	147
Arrive On Green	0.00	0.61	0.61	0.13	0.79	0.00				0.10	0.00	0.10
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	750	715	184	1420	0				218	0	101
Grp Sat Flow(s),veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	9.5	31.1	9.0	13.0	0.0				5.3	0.0	5.5
Cycle Q Clear(g_c), s	0.0	9.5	31.1	9.0	13.0	0.0				5.3	0.0	5.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2051	900	223	2663	0				330	0	147
V/C Ratio(X)	0.00	0.37	0.79	0.82	0.53	0.00				0.66	0.00	0.68
Avail Cap(c_a), veh/h	0	2051	900	314	2663	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.73	0.73	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.4	12.6	35.9	3.3	0.0				37.0	0.0	37.1
Incr Delay (d2), s/veh	0.0	0.5	7.2	8.7	0.6	0.0				2.2	0.0	5.5
Initial Q Delay(Q3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	4.5	14.3	4.7	6.1	0.0				2.6	0.0	2.5
LnGrp Delay(d), s/veh	0.0	8.9	19.8	44.7	3.8	0.0				39.2	0.0	42.6
LnGrp LOS		A	B	D	A					D		D
Approach Vol, veh/h	1465				1604					319		
Approach Delay, s/veh	14.2				8.5					40.3		
Approach LOS	B				A					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	55.9			12.9		72.1						
Change Period (Y+Rc), s	4.2			5.0		5.0						
Max Green Setting (Gmax), s	45.0			18.0		57.4						
Max Q Clear Time (g_c+Q1), s	33.1			7.5		15.0						
Green Ext Time (p_c), s	0.2	2.9		0.8		15.8						
Intersection Summary												
HCM 2010 Ctrl Delay	14.0											
HCM 2010 LOS	B											
Notes												

HCM 2010 Signalized Intersection Summary
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14: I-15 NB Ramps & Auto Park Way/W 9th AveHarmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	118	630	0	0	667	318	681	1	187	0	0	0
Future Volume (veh/h)	118	630	0	0	667	318	681	1	187	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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
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
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776	1776		1776
Adj Flow Rate, veh/h	144	788	0	0	758	361	823	0	253			253
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			1
Peak Hour Factor	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74			0.74
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			7
Cap, veh/h	225	2021	0	0	1623	723	975	0	435			435
Arrive On Green	0.14	1.00	0.00	0.00	0.48	0.48	0.29	0.00	0.29			0.29
Sat Flow, veh/h	3281	3463	0	0	3463	1503	3382	0	1509			1509
Grp Volume(v), veh/h	144	788	0	0	758	361	823	0	253			253
Grp Sat Flow(s),veh/h/ln	1687	0	0	0	1687	1503	1691	0	1509			1509
Q Serve(g_s), s	3.5	0.0	0.0	0.0	12.8	13.9	19.5	0.0	12.2			12.2
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	12.8	13.9	19.5	0.0	12.2			12.2
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00	0.00	1.00			1.00
Lane Grp Cap(c), veh/h	225	2021	0	0	1623	723	975	0	435			435
V/C Ratio(X)	0.64	0.39	0.00	0.00	0.47	0.50	0.84	0.00	0.58			0.58
Avail Cap(c_a), veh/h	610	2021	0	0	1623	723	1210	0	540			540
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00
Upstream Filter(I)	0.91	0.91	0.00	0.00	1.00	1.00	1.00	0.00	1.00			1.00
Uniform Delay (d), s/veh	35.7	0.0	0.0	0.0	14.8	15.1	28.5	0.0	25.9			25.9
Incr Delay (d2), s/veh	2.8	0.5	0.0	0.0	0.2	0.5	4.7	0.0	1.2			1.2
Initial Q Delay(Q3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
%ile BackOfQ(50%), veh/h	1.7	0.1	0.0	0.0	5.9	5.8	9.7	0.0	5.2			5.2
LnGrp Delay(d), s/veh	38.4	0.5	0.0	0.0	15.0	15.6	33.1	0.0	27.1			27.1
LnGrp LOS	D	A			B	B	C		C			C
Approach Vol, veh/h	932				1119				1076			
Approach Delay, s/veh	6.4				15.2				31.7			
Approach LOS	A				B				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s	55.9				10.0	45.9		29.1				
Change Period (Y+Rc), s	5.0				4.2	5.0		4.6				
Max Green Setting (Gmax), s	45.0				16	25.0		34.4				
Max Q Clear Time (g_c+Q1), s	2.0				5.5	15.9		21.5				
Green Ext Time (p_c), s	6.7				0.3	4.4		3.0				
Intersection Summary												
HCM 2010 Ctrl Delay	18.2											
HCM 2010 LOS	B											
Notes												

HCM 2010 Signalized Intersection Summary
N:\2314\Analysis\Intersections\HCM 2010\Existing + Cuml + Proj AM.synSynchro 8 Report
Page 16Existing + Cuml Proj + Project PM
13: I-15 SB Ramps & Auto Park WayHarmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	861	921	267	1126	0	0	0	0	350	0	108
Future Volume (veh/h)	0	861	921	267	1126	0	0	0	0	350	0	108
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	897	959	322	1265	0				393	0	130
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.96	0.96	0.83	0.89	0.92				0.89	0.92	0.83
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	1796	798	318	2571	0				480	0	214
Arrive On Green	0.00	0.53	0.53	0.19	0.76	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	3463	1499	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	897	959	322	1265	0				393	0	130
Grp Sat Flow(s),veh/h/ln	0	1687	1499	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	16.9	53.2	18.8	14.3	0.0				11.3	0.0	8.1
Cycle Q Clear(g_c), s	0.0	16.9	53.2	18.8	14.3	0.0				11.3	0.0	8.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1796	798	318	2571	0				480	0	214
V/C Ratio(X)	0.00	0.50	1.20	1.01	0.49	0.00				0.82	0.00	0.61
Avail Cap(c_a), veh/h	0	1796	798	318	2571	0				609	0	272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.70	0.70	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.9	23.4	40.6	4.5	0.0				41.7	0.0	40.3
Incr Delay (d2), s/veh	0.0	1.0	10.2	45.5	0.5	0.0				7.0	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.1	44.5	12.8	6.7	0.0				5.8	0.0	3.5
LnGrp Delay(d),s/veh	0.0	15.9	126.1	86.2	5.0	0.0				48.6	0.0	43.1
LnGrp LOS		B	F	F	A					D		D
Approach Vol, veh/h	1856				1587					523		
Approach Delay, s/veh	72.8				21.5					47.2		
Approach LOS	E				C					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	58.0	23.2		18.9		81.2						
Change Period (Y+Rc), s	4.2	5.0		4.6		5.0						
Max Green Setting (Gmax),s	49.4			18.0		72.4						
Max Q Clear Time (g_c+Rc),s	55.2			13.3		16.3						
Green Ext Time (p_c), s	0.0	0.0		0.9		13.9						
Intersection Summary												
HCM 2010 Ctrl Delay	48.9											
HCM 2010 LOS	D											
Notes												

ATTACHMENT D

SUPPLEMENTAL FREEWAY ANALYSIS FOR I-15 SOUTH OF 9TH AVENUE/AUTO PARK WAY

I-15 FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes ^a	Hourly Capacity ^b	Existing ^c		V/C ^d		LOS ^e		Existing + Project		V/C		LOS		Δ ^f V/C		Impact Type
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
Interstate 15																		
South of Auto Park Way	NB	5M+2HOV	10,000	5,414	8,080	0.541	0.808	B	D	5,433	8,137	0.543	0.814	B	D	0.002	0.006	None
	SB	4M+1A+2HOV	9,200	5,159	5,061	0.561	0.550	B	B	5,204	5,085	0.566	0.553	B	B	0.005	0.003	None
Freeway Segment	Dir.	# of Lanes ^a	Hourly Capacity ^b	Existing + Cumulative Projects		V/C ^d		LOS ^e		Existing + Project + Cumulative Projects		V/C		LOS		Δ ^f V/C		Impact Type
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
Interstate 15																		
South of Auto Park Way	NB	5M+2HOV	10,000	6,226	9,292	0.623	0.929	C	E	6,245	9,349	0.625	0.935	C	E	0.002	0.006	None
	SB	4M+1A+2HOV	9,200	5,933	5,820	0.645	0.633	C	C	5,978	5,844	0.650	0.635	C	C	0.005	0.003	None

Footnotes:

- a.

Lane geometry taken from PeMS lane configurations at corresponding post mile.
- b.

Capacity calculated at 2000 vehicles per hour (vph) per mainline lane (pcphpl) and 1200 vph per lane for auxiliary lanes. HOV volumes and capacity not included in the analysis.
- c.

Existing volumes taken from PeMS peak hour data where volumes were available from 100% complete healthy detectors (February 2016).
- d.

V/C = (Peak Hour Volume/Hourly Capacity)
- e.

LOS = Level of Service
- f.

“Δ” denotes the Project-induced increase in V/C. Per SANTEC/ITE Guidelines, a significant impact occurs when the V/C is increased by 0.01 for LOS E or F.

General Notes:

1.

M = Mainline
2.

A = Auxiliary
3.

HOV = High-occupancy vehicle

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

ATTACHMENT E

SUPPLEMENTAL PEAK HOUR INTERSECTION ANALYSIS FOR PROJECT DRIVEWAYS A AND C

ACCESS INTERSECTION OPERATIONS

Intersection	Proposed Control Type	Move ment	Peak Hour	Existing + Project	
				Delay ^a	LOS ^b
1. Private Street A/ Country Club Drive	MSSC ^c	WBL	AM	9.9	A
			PM	9.1	A
		SBL	AM	3.3	A
			PM	3.4	A
2. Private Street C/ Country Club Drive	MSSC ^d	NBR	AM	9.0	A
			PM	8.7	A
		WBL	AM	5.5	A
			PM	6.0	A

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service
- c. WBL movement represents critical stop-controlled movement.
- d. NBR movements represents critical stop-controlled movement.

General Notes:

1. MSSC = Minor street stop-controlled intersection.
2. WBL = westbound left-turn
3. SBL = southbound left-turn
4. NBR = northbound right-turn

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

HCM 2010 TWSC

1: Country Club Dr & Private Street A

10/26/2017

Intersection						
Int Delay, s/veh 4						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	2	2	2	2	2	2
Traffic Vol, veh/h	0	126	163	0	54	73
Future Vol, veh/h	0	126	163	0	54	73
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	-	-	-	150	-
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	137	177	0	59	79

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	374	177	0 0 177 0
Stage 1	177	-	- - - -
Stage 2	197	-	- - - -
Critical Hdwy Stg 1	6.42	6.22	- - 4.12 -
Critical Hdwy Stg 2	5.42	-	- - - -
Follow-up Hdwy	3.518	3.318	- - 2.218 -
Pot Cap-1 Maneuver	627	866	- - 1399 -
Stage 1	854	-	- - - -
Stage 2	836	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	601	866	- - 1399 -
Mov Cap-2 Maneuver	637	-	- - - -
Stage 1	818	-	- - - -
Stage 2	836	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	3.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBL	SBL	SBT
Capacity (veh/h)	-	-	866	1399	-
HCM Lane V/C Ratio	-	-	0.158	0.042	-
HCM Control Delay (s)	-	-	9.9	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Harmony Grove Parcel 06/19/2014 Existing + Proj AM_Access

Synchro 10 Report
Page 1

HCM 2010 TWSC

2: Private Street C & Country Club Dr

10/26/2017

Intersection						
Int Delay, s/veh 6.5						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2	2	2	2	2	2
Traffic Vol, veh/h	37	0	54	19	0	126
Future Vol, veh/h	37	0	54	19	0	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	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	40	0	59	21	0	137

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	40	0	179	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1570	-	811	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1570	-	780	1031
Mov Cap-2 Maneuver	-	-	-	-	780	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBL	EBT	EBR	WBL	WBT
Capacity (veh/h)	1031	-	-	1570	-
HCM Lane V/C Ratio	0.133	-	-	0.037	-
HCM Control Delay (s)	9	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Harmony Grove Parcel 06/19/2014 Existing + Proj AM_Access

Synchro 10 Report
Page 2

HCM 2010 TWSC

1: Country Club Dr & Private Street A

10/26/2017

Intersection						
Int Delay, s/veh 3.6						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	2	2	2	2	2	2
Traffic Vol, veh/h	0	69	92	0	158	197
Future Vol, veh/h	0	69	92	0	158	197
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	-	-	-	150	-
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	75	100	0	172	214

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	658	100	0 0 100 0
Stage 1	100	-	- - - -
Stage 2	559	-	- - - -
Critical Hdwy Stg 1	6.42	6.22	- - 4.12 -
Critical Hdwy Stg 2	5.42	-	- - - -
Follow-up Hdwy	3.518	3.318	- - 2.218 -
Pot Cap-1 Maneuver	429	956	- - 1493 -
Stage 1	924	-	- - - -
Stage 2	573	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	380	956	- - 1493 -
Mov Cap-2 Maneuver	365	-	- - - -
Stage 1	818	-	- - - -
Stage 2	573	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBL	SBL	SBT
Capacity (veh/h)	-	-	956	1493	-
HCM Lane V/C Ratio	-	-	0.078	0.115	-
HCM Control Delay (s)	-	-	9.1	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.4	-

Harmony Grove Parcel 06/19/2014 Existing + Proj PM_Access

Synchro 10 Report
Page 1

HCM 2010 TWSC

2: Private Street C & Country Club Dr

10/26/2017

Intersection						
Int Delay, s/veh 6.1						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	2	2	2	2	2	2
Traffic Vol, veh/h	25	0	157	40	0	67
Future Vol, veh/h	25	0	157	40	0	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	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	27	0	171	43	0	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	27	0	412	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1587	-	596	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1587	-	532	1048
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBL	EBT	EBR	WBL	WBT
Capacity (veh/h)	1048	-	-	1587	-
HCM Lane V/C Ratio	0.069	-	-	0.108	-
HCM Control Delay (s)	8.7	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	-

Harmony Grove Parcel 06/19/2014 Existing + Proj PM_Access

Synchro 10 Report
Page 2

ATTACHMENT F

SYNCHRO 10 AND HCM 2010 PEAK HOUR INTERSECTION ANALYSIS

HCM 2010
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			HCM 2010 Impact Type	EIR HCM 2000 Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c		
3. Nordahl Rd / SR 78 WB Ramps	City	Signal	AM	32.7	C	32.8	C	0.1	37.3	D	37.5	D	0.2	None	None
			PM	21.5	C	21.8	C	0.3	48.9	D	50.2	D	1.3		
4. Nordahl Rd / SR 78 EB Ramps	City	Signal	AM	23.2	C	23.5	C	0.3	25.2	C	25.7	C	0.5	None	None
			PM	33.4	C	34.6	C	1.2	38.2	D	39.9	D	1.7		
5. Auto Park Way / Mission Rd	City	Signal	AM	38.0	D	38.1	D	0.1	49.5	D	49.7	D	0.2	None	None
			PM	42.5	D	42.7	D	0.2	43.1	D	43.4	D	0.3		
6. Auto Park Way / Country Club Dr	City	Signal	AM	13.0	B	15.1	B	2.1	30.4	C	38.0	D	7.6	Cumulative	Cumulative
			PM	14.9	B	16.4	B	1.5	20.9	C	24.3	C	3.4		
7. Harmony Grove Rd / Enterprise St	City	Signal	AM	13.5	B	13.6	B	0.1	15.0	B	15.2	B	0.2	None	None
			PM	15.7	B	16.5	B	0.8	18.8	B	21.2	C	2.4		
8. Avenida Del Diablo / Citracado Pkwy	City	Signal	AM	10.0	B	10.2	B	0.2	10.4	B	10.6	B	0.2	None	None
			PM	9.5	A	10.1	B	0.6	10.3	B	11.1	B	0.8		
9. Valley Pkwy / I-15 NB Ramps	City	Signal	AM	26.6	C	27.0	C	0.4	31.8	C	31.9	C	0.1	None	None
			PM	35.9	D	36.3	D	0.4	41.8	D	41.9	D	0.1		
10. Valley Pkwy / I-15 SB Ramps	City	Signal	AM	36.4	D	36.9	D	0.5	52.0	D	52.9	D	0.9	None	None
			PM	51.8	D	51.9	D	0.1	79.8	E	79.9	E	0.1		
11. Valley Pkwy / Auto Park Way	City	Signal	AM	31.1	C	31.1	C	0.0	41.7	D	41.7	D	0.0	None	None
			PM	34.1	C	34.2	C	0.1	50.4	D	50.4	D	0.0		
12. Valley Pkwy / 9 th Ave	City	Signal	AM	26.0	C	26.5	C	0.5	31.7	C	32.5	C	0.8	None	None
			PM	31.7	C	32.3	C	0.6	43.4	D	45.2	D	1.8		
13. Valley Pkwy / 11 th Ave	City	Signal	AM	13.0	B	13.5	B	0.5	15.9	B	16.7	B	0.8	None	None
			PM	13.1	B	13.3	B	0.2	14.3	B	14.8	B	0.5		
14. Valley Pkwy / Citracado Pkwy	City	Signal	AM	28.9	C	34.0	C	5.1	40.5	D	49.4	D	8.9	Cumulative	Cumulative
			PM	24.5	C	28.3	C	3.8	28.5	C	33.9	C	5.4		
15. Auto Park Way / I-15 SB Ramps	City	Signal	AM	13.0	B	13.2	B	0.2	14.1	B	14.2	B	0.1	None	None
			PM	47.2	D	48.0	D	0.8	49.8	D	49.9	D	0.1		
16. Auto Park Way / I-15 NB Ramps	City	Signal	AM	17.9	B	17.9	B	0.0	20.6	B	20.7	C	0.1	None	None
			PM	16.9	C	17.1	B	0.2	20.2	C	20.4	C	0.2		
(Continued on Next Page)															

HCM 2010
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			HCM 2010 Impact Type	EIR HCM 2000 Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c		
(Continued from Previous Page)															
17. Country Club Dr / Kauana Loa Dr	County	AWSC ^e	AM	8.2	A	8.7	A	–	9.8	A	10.7	B	–	None	None
			PM	8.8	A	9.7	A	–	10.6	B	12.1	B	–		
18. Country Club Dr / Harmony Grove Village Pkwy	County	AWSC	AM	9.9	A	10.4	B	–	11.0	B	11.8	B	–	None	None
			PM	11.2	B	12.4	B	–	12.1	B	13.5	B	–		
19. Country Club Dr / Harmony Grove Rd	County	Signal	AM	31.2	C	43.9	D	–	44.9	D	49.2	D	–	Direct & Cumulative	Direct & Cumulative
			PM	41.0	D	>100.0	F	>2.0	57.7	E	>100.0	F	>2.0		
20. Harmony Grove Rd / Kauana Loa Dr	County	MSSC ^f	AM	12.0	B	14.3	B	–	26.5	D	53.0	E	75 ^g	Cumulative	Cumulative
			PM	15.2	C	18.5	C	–	33.3	D	68.0	F	40 ^g		
21. Harmony Grove Rd / Harmony Grove Village Pkwy	County	Signal	AM	22.1	C	23.2	C	–	22.9	C	24.7	C	–	None	None
			PM	19.1	B	23.3	C	–	23.1	C	25.6	C	–		

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. “Δ” denotes the Project-induced increase in delay for intersections located in the City of Escondido. “Δ” denotes the Project-induced increase in delay for signalized intersections and Project traffic added to the critical movement for unsignalized intersections located in the County of San Diego.
- d. Project increases in delay or number of trips only shown for County intersection where LOS E or F operations are reported.
- e. AWSC – All Way Stop Controlled intersection. Average intersection delay is reported.
- f. MSSC – Minor Street Stop Controlled intersection. Minor street left-turn delay is reported.
- g. Both the northbound left-turn and right-turn volumes are shown for the LOS E/F intersection since the existing geometry provides one shared lane for both movements.

General Notes:

- 1. DNE = Does not exist.
- 2. **Bold** typeface and **shading** represents a significant impact.
- 3. Jur. = Jurisdiction, City = City of Escondido

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

HCM 2010 Signalized Intersection Summary 1: SR 78 WB Ramps & Nordahl Rd

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	437	7	145	379	482	0	0	560	297
Future Volume (veh/h)	0	0	0	437	7	145	379	482	0	0	560	297
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863
Adj Flow Rate, veh/h				527	0	106	412	524	0	0	609	323
Adj No. of Lanes				2	0	1	2	2	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				657	0	293	1318	2488	0	0	1343	418
Arrive On Green				0.19	0.00	0.19	0.13	0.23	0.00	0.00	0.26	0.26
Sat Flow, veh/h				3548	0	1583	3442	3632	0	0	5253	1583
Grp Volume(v), veh/h				527	0	108	412	524	0	0	609	323
Grp Sat Flow(s), veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583
Q Serve(g, s), s				14.2	0.0	6.0	10.9	12.0	0.0	0.0	10.0	18.9
Cycle Q Clear(g_c), s				14.2	0.0	6.0	10.9	12.0	0.0	0.0	10.0	18.9
Prop In Lane				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Lane Grp Cap(c), veh/h				657	0	293	1318	2488	0	0	1343	418
V/C Ratio(X)				0.80	0.00	0.37	0.31	0.21	0.00	0.00	0.45	0.77
Avail Cap(c_a), veh/h				1327	0	592	1318	2488	0	0	1343	418
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.88	0.88	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				39.0	0.0	35.6	31.7	16.0	0.0	0.0	30.8	34.0
Incr Delay (d2), s/veh				2.3	0.0	0.8	0.1	0.2	0.0	0.0	1.1	13.0
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h				7.2	0.0	2.7	5.2	5.9	0.0	0.0	4.8	9.8
LnGrp Delay(d), s/veh				41.3	0.0	36.4	31.8	16.2	0.0	0.0	31.9	47.0
LnGrp LOS				D		D	C	B			C	D
Approach Vol, veh/h						635		936			932	
Approach Delay, s/veh						40.5		23.1			37.1	
Approach LOS						D		C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		75.9			43.9	32.0		24.1				
Change Period (Y+Rc), s		5.6			5.6	*5.6		5.6				
Max Green Setting (Gmax), s		51.4			19.8	*26		37.4				
Max Q Clear Time (g_c+I1), s		14.0			12.9	20.9		16.2				
Green Ext Time (p_c), s		4.0			0.9	2.5		2.3				
Intersection Summary												
HCM 2010 Ctrl Delay						32.7						
HCM 2010 LOS						C						
Notes												

Harmony Grove Parcel 06/19/2014 Existing AM
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HCM 2010 Signalized Intersection Summary 3: Auto Park Way/Nordahl Rd & E Mission Rd

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	294	165	63	339	205	200	543	30	364	748	245
Future Volume (veh/h)	260	294	165	63	339	205	200	543	30	364	748	245
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	283	320	179	68	368	0	217	590	33	396	813	266
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	734	328	117	500	224	856	2180	679	447	1178	383
Arrive On Green	0.10	0.21	0.21	0.03	0.14	0.00	0.25	0.43	0.43	0.09	0.21	0.21
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3800	1235
Grp Volume(v), veh/h	283	320	179	68	368	0	217	590	33	396	725	354
Grp Sat Flow(s), veh/h/ln	1774	1774	1583	1721	1770	1583	1721	1695	1583	1721	1695	1645
Q Serve(g, s), s	8.1	7.9	5.7	1.9	10.0	0.0	5.1	7.5	1.2	11.4	19.8	19.9
Cycle Q Clear(g_c), s	8.1	7.9	5.7	1.9	10.0	0.0	5.1	7.5	1.2	11.4	19.8	19.9
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75
Lane Grp Cap(c), veh/h	344	734	328	117	500	224	856	2180	679	447	1051	510
V/C Ratio(X)	0.82	0.44	0.55	0.58	0.74	0.00	0.25	0.27	0.05	0.89	0.69	0.70
Avail Cap(c_a), veh/h	344	1168	523	172	1026	459	856	2180	679	447	1051	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81	0.81
Uniform Delay (d), s/veh	44.1	34.5	11.1	47.6	41.1	0.0	30.1	18.5	16.7	44.9	35.2	35.2
Incr Delay (d2), s/veh	14.7	0.4	1.4	4.5	2.1	0.0	0.2	0.3	0.1	15.9	3.0	6.2
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/h	4.5	3.9	2.6	1.0	5.0	0.0	2.4	3.6	0.6	6.4	9.7	9.9
LnGrp Delay(d), s/veh	58.9	34.9	12.5	52.1	43.3	0.0	30.3	18.8	16.8	60.7	38.2	41.5
LnGrp LOS	E	C	B	D	D		C	B	B	E	D	D
Approach Vol, veh/h						782		840			1475	
Approach Delay, s/veh						38.5		44.7			45.0	
Approach LOS						D		C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	47.9	8.4	25.7	29.9	36.0	15.0	19.1					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	*5					
Max Green Setting (Gmax), s	29.0	5.0	33.0	11.0	31.0	10.0	*29					
Max Q Clear Time (g_c+I1), s	9.5	3.9	9.9	7.1	21.9	10.1	12.0					
Green Ext Time (p_c), s	0.0	4.1	0.0	2.7	0.3	4.7	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay						38.0						
HCM 2010 LOS						D						
Notes												

Harmony Grove Parcel 06/19/2014 Existing AM
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HCM 2010 Signalized Intersection Summary 2: Nordahl Rd & SR 78 EB Ramps

Existing AM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	137	671	0	0	0	0	613	402	189	808	0
Future Volume (veh/h)	248	137	671	0	0	0	0	613	402	189	808	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qt), veh	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
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	230	0	872				0	666	437	205	878	0
Adj No. of Lanes	1	0	2				0	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	568	0	1014				0	1547	1218	271	2010	0
Arrive On Green	0.32	0.00	0.32				0.00	0.29	0.29	0.16	1.00	0.00
Sat Flow, veh/h	1774	0	3167				0	3632	2787	3442	3632	0
Grp Volume(v), veh/h	230	0	872				0	666	437	205	878	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1770	1393	1721	1770	0
Q Serve(g_s), s	10.1	0.0	25.8				0.0	15.2	12.4	5.7	0.0	0.0
Cycle Q Clear(g_c), s	10.1	0.0	25.8				0.0	15.2	12.4	5.7	0.0	0.0
Prop In Lane	1.00	1.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Lane Grp Cap(c), veh/h	568	0	1014				0	1547	1218	271	2010	0
V/C Ratio(X)	0.40	0.00	0.86				0.00	0.43	0.36	0.76	0.44	0.00
Avail Cap(c_a), veh/h	752	0	1343				0	1547	1218	382	2010	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.67	0.67	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.89	0.89	0.92	0.92	0.00
Uniform Delay (d), s/veh	26.6	0.0	31.9				0.0	25.3	24.3	41.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	4.6				0.0	0.8	0.7	5.0	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	11.9				0.0	7.6	4.9	2.9	0.2	0.0
LnGrp Delay(d), s/veh	27.0	0.0	36.5				0.0	26.1	25.0	46.2	0.6	0.0
LnGrp LOS	C		D				C	C	C	D	A	
Approach Vol, veh/h	1102						1103			1083		
Approach Delay, s/veh	34.5						25.7			9.3		
Approach LOS	C						C			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+R), s	33.1	49.3		37.6		62.4						
Change Period (Y+Rc), s	5.2	5.6		5.6		* 5.6						
Max Green Setting (Gmax), s	30.1			42.4		* 47						
Max Q Clear Time (g_c+I), s	18.7			27.8		2.0						
Green Ext Time (p_c), s	0.2	5.3		4.2		7.7						
Intersection Summary												
HCM 2010 Ctrl Delay	23.2											
HCM 2010 LOS	C											
Notes												

HCM 2010 Signalized Intersection Summary
5: Harmony Grove Rd & Enterprise St

Existing AM
11/20/2017

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	129	99	145	340	106	145		
Future Volume (veh/h)	129	99	145	340	106	145		
Number	4	14	3	8	5	12		
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		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	140	108	158	370	115	158		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	250	213	242	695	748	884		
Arrive On Green	0.13	0.13	0.14	0.37	0.42	0.42		
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583		
Grp Volume(v), veh/h	140	108	158	370	115	158		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1863	1774	1583		
Q Serve(g_s), s	3.1	2.8	3.7	6.8	1.8	2.1		
Cycle Q Clear(g_c), s	3.1	2.8	3.7	6.8	1.8	2.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	250	213	242	695	748	884		
V/C Ratio(X)	0.56	0.51	0.65	0.53	0.15	0.18		
Avail Cap(c_a), veh/h	700	595	667	1592	748	884		
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	17.8	17.6	18.0	10.8	7.8	4.8		
Incr Delay (d2), s/veh	2.0	1.9	3.0	0.6	0.4	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	1.7	1.3	2.0	3.6	1.0	1.0		
LnGrp Delay(d),s/veh	19.7	19.5	20.9	11.4	8.3	5.2		
LnGrp LOS		B	C	B	A	A		
Approach Vol, veh/h	248			528	273			
Approach Delay, s/veh	19.6			14.2	6.5			
Approach LOS	B			B	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		23.0	10.5	10.4				20.9
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		18.5	16.5	16.5				37.5
Max Q Clear Time (g_c+I1), s		4.1	5.7	5.1				8.8
Green Ext Time (p_c), s		0.7	0.3	0.8				2.4
Intersection Summary								
HCM 2010 Ctrl Delay				13.5				
HCM 2010 LOS				B				

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HCM 2010 TWSC
6: Citracado Pkwy & Avenida del Diablo

Existing AM
11/20/2017

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	226	8	147	82	0	260	0
Future Vol, veh/h	0	0	10	0	0	226	8	147	82	0	260	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	246	9	160	89	0	283	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	142	-	-	80	283	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	880	0	0	964	1276	-	-	0	-	-
Stage 1	0	0	-	0	0	-	-	-	-	0	-	-
Stage 2	0	0	-	0	0	-	-	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	880	-	-	964	1276	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.1		10		0.3		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBT	SBR					
Capacity (veh/h)	1276	-	-	880	964	-	-					
HCM Lane V/C Ratio	0.007	-	-	0.012	0.255	-	-					
HCM Control Delay (s)	7.8	-	-	9.1	10	-	-					
HCM Lane LOS	A	-	-	A	B	-	-					
HCM 95th %ile Q(veh)	0	-	-	0	1	-	-					

Harmony Grove Parcel 06/19/2014 Existing AM
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Synchro 10 Report
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Existing AM
7: I-15 NB Ramps & Valley Pkwy

Harmony Grove Parcel
11/20/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	309	692	0	0	770	177	303	3	341	0	0	0	
Future Volume (veh/h)	309	692	0	0	770	177	303	3	341	0	0	0	
Number	5	2	12	1	6	16	3	8	18				
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				
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	
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863				
Adj Flow Rate, veh/h	336	752	0	0	837	192	329	3	371				
Adj No. of Lanes	2	3	0	0	3	1	0	1	1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2				
Cap, veh/h	418	2640	0	0	1819	565	677	6	606				
Arrive On Green	0.12	0.52	0.00	0.00	0.36	0.36	0.38	0.38	0.38				
Sat Flow, veh/h	3442	5253	0	0	5253	1579	1759	16	1576				
Grp Volume(v), veh/h	336	752	0	0	837	192	332	0	371				
Grp Sat Flow(s),veh/h/ln	1721	1695	0	0	1695	1579	1775	0	1576				
Q Serve(g_s), s	10.0	8.8	0.0	0.0	13.3	9.3	14.9	0.0	19.9				
Cycle Q Clear(g_c), s	10.0	8.8	0.0	0.0	13.3	9.3	14.9	0.0	19.9				
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00				
Lane Grp Cap(c), veh/h	418	2640	0	0	1819	565	683	0	606				
V/C Ratio(X)	0.80	0.28	0.00	0.00	0.46	0.34	0.49	0.00	0.61				
Avail Cap(c_a), veh/h	682	2640	0	0	1819	565	683	0	606				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	0.95	0.95	0.00	0.00	1.00	1.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	44.9	14.3	0.0	0.0	25.9	24.7	24.4	0.0	26.0				
Incr Delay (d2), s/veh	3.5	0.3	0.0	0.0	0.8	1.6	2.5	0.0	4.6				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	5.0	4.2	0.0	0.0	6.3	4.3	7.8	0.0	9.4				
LnGrp Delay(d),s/veh	48.4	14.5	0.0	0.0	26.8	26.3	26.9	0.0	30.6				
LnGrp LOS	D	B			C	C	C		C				
Approach Vol, veh/h	1088				1029			703					
Approach Delay, s/veh	25.0				26.7			28.8					
Approach LOS	C				C			C					
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	2				5	6		8					
Phs Duration (G+Y+Rc), s	60.0				16.9	43.1		45.0					
Change Period (Y+Rc), s	5.5				4.2	5.5		4.6					
Max Green Setting (Gmax), s	54.5				* 21	29.5		40.4					
Max Q Clear Time (g_cH1), s	10.8				12.0	15.3		21.9					
Green Ext Time (p_c), s	5.4				0.8	5.1		3.3					
Intersection Summary													
HCM 2010 Ctrl Delay				26.6									
HCM 2010 LOS				C									
Notes													

HCM 2010 Signalized Intersection Summary 9: W Valley Pkwy & Auto Park Way

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	365	320	75	583	31	229	650	39	98	832	560
Future Volume (veh/h)	179	365	320	75	583	31	229	650	39	98	832	560
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	195	397	348	82	634	34	249	707	42	107	904	609
Adj No. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	527	459	146	854	46	338	1883	586	175	1578	628
Arrive On Green	0.09	0.29	0.29	0.04	0.25	0.25	0.10	0.37	0.37	0.05	0.31	0.31
Sat Flow, veh/h	3442	1796	1561	3442	3417	183	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	195	391	354	82	328	340	249	707	42	107	904	609
Grp Sat Flow(s), veh/h/ln	1721	1770	1587	1721	1770	1830	1721	1695	1583	1721	1695	1583
Q Serve(g, s), s	4.3	15.7	15.9	1.8	13.4	13.4	5.5	8.0	1.3	2.4	11.7	24.3
Cycle Q Clear(g, c), s	4.3	15.7	15.9	1.8	13.4	13.4	5.5	8.0	1.3	2.4	11.7	24.3
Prop In Lane	1.00	0.98	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	297	520	466	146	442	457	338	1883	586	175	1578	628
V/C Ratio(X)	0.66	0.75	0.76	0.56	0.74	0.74	0.74	0.38	0.07	0.61	0.57	0.97
Avail Cap(c_a), veh/h	1054	926	831	220	497	514	439	1883	586	264	1578	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	25.1	25.1	36.8	27.1	27.1	34.3	18.0	16.0	36.4	22.7	23.2
Incr Delay (d2), s/veh	2.4	2.2	2.4	3.3	5.2	5.1	4.6	0.6	0.2	3.4	1.5	29.1
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/h	2.1	7.9	7.3	0.9	7.1	7.4	2.8	3.8	0.6	1.2	5.7	17.8
LnGrp Delay(d), s/veh	37.1	27.3	27.7	40.1	32.3	32.2	39.0	18.6	16.2	39.8	24.2	52.3
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	C	D
Approach Vol, veh/h	940			750			998			1620		
Approach Delay, s/veh	29.5			33.1			23.6			35.8		
Approach LOS	C			C			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	34.0	8.3	28.0	12.7	29.3	11.8	24.6				
Change Period (Y+Rc), s	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	6.0	29.0	5.0	41.0	10.0	24.0	24.0	22.0				
Max Q Clear Time (g_c+10), s	4.4	10.0	3.8	17.9	7.5	26.3	6.3	15.4				
Green Ext Time (p, c), s	0.0	4.9	0.0	5.1	0.2	0.0	0.6	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay	31.1											
HCM 2010 LOS	C						D					

Harmony Grove Parcel 06/19/2014 Existing AM
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HCM 2010 Signalized Intersection Summary 10: W Valley Pkwy & W. 9th Ave

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	195	12	117	270	146	7	577	128	93	1058	257
Future Volume (veh/h)	161	195	12	117	270	146	7	577	128	93	1058	257
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	175	212	13	127	293	159	8	627	139	101	1150	279
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	722	44	161	410	217	14	1564	341	129	1793	435
Arrive On Green	0.12	0.21	0.21	0.09	0.18	0.18	0.01	0.37	0.37	0.07	0.44	0.44
Sat Flow, veh/h	1774	3389	207	1774	2239	1184	1774	4180	912	1774	4087	991
Grp Volume(v), veh/h	175	110	115	127	230	222	8	507	259	101	954	475
Grp Sat Flow(s), veh/h/ln	1774	1770	1826	1774	1770	1654	1774	1695	1702	1774	1695	1688
Q Serve(g, s), s	7.7	4.2	4.2	5.6	9.8	10.2	0.4	8.8	9.0	4.5	17.6	17.6
Cycle Q Clear(g, c), s	7.7	4.2	4.2	5.6	9.8	10.2	0.4	8.8	9.0	4.5	17.6	17.6
Prop In Lane	1.00		1.00		1.00		1.00		1.00		1.00	1.00
Lane Grp Cap(c), veh/h	214	377	389	161	324	303	14	1269	637	129	1487	741
V/C Ratio(X)	0.82	0.29	0.30	0.79	0.71	0.73	0.55	0.40	0.41	0.28	0.64	0.64
Avail Cap(c_a), veh/h	288	684	706	243	640	598	8	1269	637	177	1487	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	26.5	26.5	35.7	30.7	30.9	39.6	18.5	18.5	36.5	17.6	17.6
Incr Delay (d2), s/veh	12.7	0.4	0.4	9.6	2.9	3.4	29.2	0.9	1.9	14.3	2.1	4.2
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/h	5.1	2.2	3.2	5.0	4.9	0.3	4.2	4.6	2.7	8.7	9.1	9.1
LnGrp Delay(d), s/veh	47.1	26.9	26.9	45.4	33.6	34.3	68.8	19.4	20.5	50.9	19.7	21.8
LnGrp LOS	D	C	C	D	C	C	E	B	B	C	D	B
Approach Vol, veh/h	400			579			773			1530		
Approach Delay, s/veh	35.8			36.5			20.4			22.4		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	12.3	22.1	5.7	40.2	14.7	19.7					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
Max Green Setting (Gmax), s	31.0	31.0	31.0	31.0	31.0	31.0	31.0					
Max Q Clear Time (g_c+10), s	11.0	7.6	6.2	2.4	19.6	9.7	12.2					
Green Ext Time (p, c), s	0.0	5.0	0.1	1.2	0.0	8.4	0.1	2.5				
Intersection Summary												
HCM 2010 Ctrl Delay	26.0											
HCM 2010 LOS	C						D					

Harmony Grove Parcel 06/19/2014 Existing AM
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Synchro 10 Report
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HCM 2010 Signalized Intersection Summary 11: W Valley Pkwy & W. 11th Ave/W 11th Ave

Existing AM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	19	24	14	42	49	20	637	6	25	987	42
Future Volume (veh/h)	50	19	24	14	42	49	20	637	6	25	987	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	54	21	26	15	46	53	22	692	7	27	1073	46
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	45	55	146	65	75	37	1764	18	44	1753	784
Arrive On Green	0.06	0.06	0.06	0.08	0.08	0.08	0.02	0.49	0.49	0.02	0.50	0.50
Sat Flow, veh/h	1774	758	939	1774	791	911	1774	3590	36	1774	3539	1583
Grp Volume(v), veh/h	54	0	47	15	0	99	22	341	358	27	1073	46
Grp Sat Flow(s), veh/h/ln/1774	0	1697	1774	0	1702	1774	1770	1856	1774	1770	1583	1583
Q Serve(s/g), s	1.6	0.0	1.4	0.4	0.0	3.0	0.6	6.4	6.4	0.8	11.5	0.8
Cycle Q Clear(g_c), s	1.6	0.0	1.4	0.4	0.0	3.0	0.6	6.4	6.4	0.8	11.5	0.8
Prop In Lane, s	1.00	0.00	0.55	1.00	0.00	0.54	1.00	0.02	1.00	0.02	1.00	1.00
V/C Ratio(x)	104	0	100	146	0	140	37	870	912	44	1753	784
Lane Cap Cap(c), veh/h	0.52	0.00	0.47	0.10	0.00	0.71	0.59	0.39	0.39	0.61	0.61	0.06
Avail Cap(c_a), veh/h	541	0	517	541	0	519	135	870	912	186	1753	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh/24.0	0.0	23.9	22.3	0.0	23.5	25.5	8.4	8.4	25.3	9.6	6.9	6.9
Incr Delay (d2), s/veh	3.9	0.0	3.4	0.3	0.0	6.4	14.2	1.3	1.3	13.1	1.6	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/6	0.0	0.0	0.7	0.2	0.0	1.7	0.5	3.4	3.5	0.5	5.9	0.4
LnGrp Delay(d),s/veh	27.9	0.0	27.3	22.6	0.0	29.9	39.7	9.7	9.7	38.4	11.2	7.0
LnGrp LOS	C		C	C		C	D	A	A	D	B	A
Approach Vol, veh/h		101			114			721			1146	
Approach Delay, s/veh		27.7			29.0			10.6			11.7	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2										
Phs Duration (G+Y+Rc), s/8	30.3			7.6	5.6	30.5				8.8		
Change Period (Y+Rc), s/4.5	4.5			4.5	4.5	4.5				4.5		
Max Green Setting (Gma) s/8	24.5			16.0	4.0	26.0				16.0		
Max Q Clear Time (g_c+1/2) s/8.4	8.4			3.6	2.6	13.5				5.0		
Green Ext Time (p_c), s/0.0	4.0			0.2	0.0	6.2				0.3		
Intersection Summary												
HCM 2010 Ctrl Delay					13.0							
HCM 2010 LOS					B							

HCM 2010 Signalized Intersection Summary
13: I-15 SB Ramps & Auto Park Way

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕↕			↕↕↕			↕↕↕			↕↕↕		
Traffic Volume (veh/h)	0	552	627	121	1156	0	0	0	0	155	7	73
Future Volume (veh/h)	0	552	627	121	1156	0	0	0	0	155	7	73
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	708	667	175	1344	0				208	0	96
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	2081	914	214	2675	0				318	0	142
Arrive On Green	0.00	0.62	0.62	0.13	0.79	0.00				0.09	0.00	0.09
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	708	667	175	1344	0				208	0	96
Grp Sat Flow(s), veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509
Q Serve(g, s), s	0.0	8.6	26.7	8.6	11.7	0.0				5.0	0.0	5.2
Cycle Q Clear(g, c), s	0.0	8.6	26.7	8.6	11.7	0.0				5.0	0.0	5.2
Prop In Lane	0.00			1.00	1.00	0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2081	914	214	2675	0				318	0	142
V/C Ratio(X)	0.00	0.34	0.73	0.82	0.50	0.00				0.65	0.00	0.68
Avail Cap(c, a), veh/h	0	2081	914	314	2675	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.77	0.77	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.9	11.4	36.2	3.0	0.0				37.2	0.0	37.2
Incr Delay (d2), s/veh	0.0	0.4	5.1	8.0	0.5	0.0				2.3	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	12.0	4.5	5.4	0.0				2.5	0.0	2.4
LnGrp Delay(d),s/veh	0.0	8.3	16.5	44.1	3.5	0.0				39.4	0.0	42.8
LnGrp LOS	A			D			D			D		
Approach Vol, veh/h	1375			1519						304		
Approach Delay, s/veh	12.3			8.2						40.5		
Approach LOS	B			A						D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	57.4			12.6		72.4						
Change Period (Y+Rc), s	4.2	5.0		4.6		5.0						
Max Green Setting (Gmax), s	37.4			18.0		49.4						
Max Q Clear Time (g, c+I), s	28.7			7.2		13.7						
Green Ext Time (p, c), s	0.2	4.9		0.8		13.7						
Intersection Summary												
HCM 2010 Ctrl Delay	13.0											
HCM 2010 LOS	B											
Notes												

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HCM 2010 Signalized Intersection Summary
14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Existing AM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	  			  			  			  		
Traffic Volume (veh/h)	112	595	0	0	633	303	644	1	178	0	0	0
Future Volume (veh/h)	112	595	0	0	633	303	644	1	178	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
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
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776	1776	1776	1776
Adj Flow Rate, veh/h	137	744	0	0	719	344	779	0	241			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74			
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			
Cap, veh/h	218	2062	0	0	1671	745	933	0	417			
Arrive On Green	0.13	1.00	0.00	0.00	0.50	0.50	0.28	0.00	0.28			
Sat Flow, veh/h	3281	3463	0	0	3463	1503	3382	0	1509			
Grp Volume(v), veh/h	137	744	0	0	719	344	779	0	241			
Grp Sat Flow(s), veh/h/ln	1640	1687	0	0	1687	1503	1691	0	1509			
Q Serve(g_s), s	3.4	0.0	0.0	0.0	11.6	12.7	18.4	0.0	11.7			
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	11.6	12.7	18.4	0.0	11.7			
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Lane Grp Cap(c), veh/h	218	2062	0	0	1671	745	933	0	417			
V/C Ratio(X)	0.63	0.36	0.00	0.00	0.43	0.46	0.83	0.00	0.58			
Avail Cap(c_a), veh/h	610	2062	0	0	1671	745	1210	0	540			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	35.9	0.0	0.0	0.0	13.8	14.0	28.9	0.0	26.5			
Incr Delay (d2), s/veh	2.8	0.5	0.0	0.0	0.2	0.4	4.1	0.0	1.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.6	0.1	0.0	0.0	5.4	5.3	9.1	0.0	5.0			
LnGrp Delay(d),s/veh	38.6	0.5	0.0	0.0	13.9	14.5	33.0	0.0	27.8			
LnGrp LOS	D			B			C			C		
Approach Vol, veh/h	881			1063			1020					
Approach Delay, s/veh	6.4			14.1			31.8					
Approach LOS	A			B			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	56.9			9.8			47.1			28.1		
Change Period (Y+Rc), s	5.0			4.2			5.0			4.6		
Max Green Setting (Gmax), s	45.0			16			25.0			30.4		
Max Q Clear Time (g_c+I), s	2.0			5.4			14.7			20.4		
Green Ext Time (p_c), s	6.2			0.3			4.5			3.0		
Intersection Summary												
HCM 2010 Ctrl Delay	17.9											
HCM 2010 LOS	B											
Notes												

Harmony Grove Parcel 06/19/2014 Existing AM
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HCM 2010 AWSC
15: Kauana Loa Dr & Country Club Dr

Existing AM
11/20/2017

Intersection						
Intersection Delay, s/veh 8.2						
Intersection LOS A						
Movement						
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	8	70	118	15	69	99
Future Vol, veh/h	8	70	118	15	69	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	76	128	16	75	108
Number of Lanes	1	0	1	0	0	1
Approach						
	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay	7.6		8.1		8.6	
HCM LOS	A		A		A	
Lane						
	NB Ln1	WB Ln1	SB Ln1			
Vol Left, %	0%	10%	41%			
Vol Thru, %	89%	0%	59%			
Vol Right, %	11%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	133	78	168			
LT Vol	0	8	69			
Through Vol	118	0	99			
RT Vol	15	70	0			
Lane Flow Rate	145	85	183			
Geometry Grp	1	1	1			
Degree of Util (X)	0.167	0.097	0.217			
Departure Headway (Hd)	4.154	4.138	4.276			
Convergence, Y/N	Yes	Yes	Yes			
Cap	850	872	829			
Service Time	2.247	2.138	2.354			
HCM Lane V/C Ratio	0.171	0.097	0.221			
HCM Control Delay	8.1	7.6	8.6			
HCM Lane LOS	A	A	A			
HCM 95th-ile O	0.6	0.3	0.8			

HCM 2010 Signalized Intersection Summary
17: Country Club Dr & Harmony Grove Rd

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	202	3	9	383	2	5	11	21	2	7	127
Future Volume (veh/h)	48	202	3	9	383	2	5	11	21	2	7	127
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	52	220	3	10	416	2	5	12	23	2	8	138
Adj No. of Lanes	1	1	0	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	607	8	18	566	843	48	115	221	405	20	344
Arrive On Green	0.04	0.33	0.33	0.01	0.30	0.30	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	1833	25	1774	1863	1583	210	504	967	1774	87	1509
Grp Volume(v), veh/h	52	0	223	10	416	2	40	0	0	2	0	146
Grp Sat Flow(s), veh/h/ln	1774	0	1858	1774	1863	1583	1682	0	0	1774	0	1596
Q Serve(g_s), s	2.3	0.0	7.2	0.4	15.8	0.0	1.5	0.0	0.0	0.1	0.0	6.1
Cycle Q Clear(g_c), s	2.3	0.0	7.2	0.4	15.8	0.0	1.5	0.0	0.0	0.1	0.0	6.1
Prop In Lane	1.00		0.01	1.00		1.00	0.12		0.57	1.00		0.95
Lane Grp Cap(c), veh/h	66	0	615	18	566	843	384	0	0	405	0	364
V/C Ratio(X)	0.79	0.00	0.36	0.56	0.73	0.00	0.10	0.00	0.00	0.00	0.00	0.40
Avail Cap(c_a), veh/h	90	0	615	90	566	843	384	0	0	405	0	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	37.7	0.0	20.1	38.9	24.6	8.6	24.1	0.0	0.0	23.5	0.0	25.9
Incr Delay (d2), s/veh	27.4	0.0	1.7	25.3	8.2	0.0	0.5	0.0	0.0	0.0	0.0	3.3
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	0.0	3.9	0.3	9.4	0.0	0.7	0.0	0.0	0.0	0.0	0.0	3.0
LnGrp Delay(d), s/veh	65.1	0.0	21.7	64.2	32.8	8.7	24.6	0.0	0.0	23.6	0.0	29.1
LnGrp LOS	E		C	E	C	A	C			C		C
Approach Vol, veh/h	275			428			40			148		
Approach Delay, s/veh	29.9			33.4			24.6			29.1		
Approach LOS	C			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6	8					
Phs Duration (G+Y+Rc), s/4	30.1			22.0	6.9	28.0	22.0					
Change Period (Y+Rc), s/4	4.0			4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	24.0			18.0	4.0	24.0	18.0					
Max Q Clear Time (g_c+1), s	9.2			8.1	4.3	17.8	8.5					
Green Ext Time (p_c), s	0.0	1.0		0.5	0.0	1.3	0.1					

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HCM 2010 Signalized Intersection Summary
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Existing AM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	111	1	276	70	40	2	155	133	10	334	73
Future Volume (veh/h)	93	111	1	276	70	40	2	155	133	10	334	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	101	121	1	300	76	43	2	188	145	11	363	79
Adj No. of Lanes	1	1	0	1	1	1	0	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	182	2	359	254	144	4	774	658	20	791	672
Arrive On Green	0.07	0.10	0.10	0.20	0.23	0.23	0.00	0.42	0.42	0.01	0.42	0.42
Sat Flow, veh/h	1774	1845	15	1774	1118	633	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	101	0	122	300	0	119	2	168	145	11	363	79
Grp Sat Flow(s), veh/h/ln	1774	0	1860	1774	0	1751	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.7	0.0	4.2	10.7	0.0	3.7	0.1	3.8	3.9	0.4	9.2	2.0
Cycle Q Clear(g_c), s	3.7	0.0	4.2	10.7	0.0	3.7	0.1	3.8	3.9	0.4	9.2	2.0
Prop In Lane	1.00		0.01	1.00		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	0	184	359	0	398	4	774	658	20	791	672
V/C Ratio(X)	0.77	0.00	0.66	0.84	0.00	0.30	0.52	0.22	0.22	0.56	0.46	0.12
Avail Cap(c_a), veh/h	314	0	450	657	0	762	107	774	658	107	791	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	0.0	28.8	25.3	0.0	21.2	33.0	12.4	12.4	32.5	13.6	11.5
Incr Delay (d2), s/veh	9.1	0.0	4.1	5.1	0.0	0.4	78.9	0.6	0.8	22.7	1.9	0.4
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	2.1	0.0	2.3	5.8	0.0	1.8	0.1	2.1	1.8	0.3	5.2	0.9
LnGrp Delay(d), s/veh	39.2	0.0	32.8	30.5	0.0	21.6	111.8	13.1	13.2	55.2	15.5	11.9
LnGrp LOS	D		C	C		C	F	B	B	E	B	B
Approach Vol, veh/h	223			419			315			453		
Approach Delay, s/veh	35.7			28.0			13.7			15.8		
Approach LOS	D			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	32.0	17.9	11.0	4.6	32.6	9.4	19.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.0	27.5	24.5	16.0	4.0	27.5	11.7	28.8				
Max Q Clear Time (g_c+1), s	2.4	5.9	12.7	6.2	2.1	11.2	5.7	5.7				
Green Ext Time (p_c), s	0.0	1.4	0.7	0.4	0.0	2.2	0.1	0.6				

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HCM 2010 TWSC
18: Harmony Grove Rd & Kauana Loa Dr

Existing AM
11/20/2017

Intersection	EBT	EBR	WBL	WBT	NBL	NBR
Int Delay, s/veh	8.3					
Lane Configurations						
Traffic Vol, veh/h	68	12	406	38	15	231
Future Vol, veh/h	68	12	406	38	15	231
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	13	441	41	16	251
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	87	0	1004	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	923	-
Critical Hdwy Stg 1	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1509	-	268	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	387	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1509	-	188	979
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	387	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	7.7	12			
HCM LOS		B				
Minor Lane/Major Mvmt	NbLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	779	-	-	1509	-	
HCM Lane V/C Ratio	0.343	-	-	0.292	-	
HCM Control Delay (s)	12	-	-	8.4	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %ile Q(veh)	1.5	-	-	1.2	-	

Harmony Grove Parcel 06/19/2014 Existing AM
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HCM 2010 Signalized Intersection Summary
1: SR 78 WB Ramps & Nordahl Rd

Existing PM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	469	5	248	502	884	0	0	727	348
Future Volume (veh/h)	0	0	0	469	5	248	502	884	0	0	727	348
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863
Adj Flow Rate, veh/h				596	0	182	546	961	0	0	790	378
Adj No. of Lanes				2	0	1	2	2	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh. %				2	2	2	2	2	0	0	2	2
Cap, veh/h				736	0	328	616	2409	0	0	2286	712
Arrive On Green				0.21	0.00	0.21	0.36	1.00	0.00	0.00	0.45	0.45
Sat Flow, veh/h				3548	0	1583	3424	3632	0	0	5253	1583
Grp Volume(v), veh/h				596	0	182	546	961	0	0	790	378
Grp Sat Flow(s), veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583
Q Serve(q_s), s				16.0	0.0	10.3	14.9	0.0	0.0	0.0	10.1	17.3
Cycle Q Clear(q_c), s				16.0	0.0	10.3	14.9	0.0	0.0	0.0	10.1	17.3
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				736	0	328	616	2409	0	0	2286	712
V/C Ratio(x)				0.81	0.00	0.55	0.89	0.40	0.00	0.00	0.35	0.53
Avail Cap(c_a), veh/h				1242	0	554	750	2409	0	0	2286	712
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(f)				1.00		1.00	0.52	0.52	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				37.8	0.0	35.5	31.1	0.0	0.0	0.0	17.9	19.0
Incr Delay (d2), s/veh				2.2	0.0	1.5	6.1	0.3	0.0	0.0	0.4	2.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.1	0.0	4.6	7.5	0.1	0.0	0.0	4.8	8.1
LnGrp Delay(d),s/veh				40.0	0.0	37.0	37.2	0.3	0.0	0.0	18.3	22.7
LnGrp LOS				D		D	D	A			B	C
Approach Vol, veh/h					778			1507			1168	
Approach Delay, s/veh					39.3			13.6			19.8	
Approach LOS					D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs						6						
Phs Duration (G+Y+Rc), s				7.7		23.1		50.6			26.3	
Change Period (Y+Rc), s				5.6		5.2		5.6			5.6	
Max Green Setting (Gmax), s				53.8		* 22		26.8			35.0	
Max Q Clear Time (q_cH1), s				2.0		16.9		19.3				
Green Ext Time (p_c), s				8.9		1.0		4.0			2.7	
Intersection Summary												
HCM 2010 Ctrl Delay				21.5								
HCM 2010 LOS				C								
Notes												

HCM 2010 Signalized Intersection Summary
2: Nordahl Rd & SR 78 EB Ramps

Existing PM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	343	56	471	0	0	0	0	1043	518	366	830	0
Future Volume (veh/h)	343	56	471	0	0	0	0	1043	518	366	830	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	269	0	664				0	1134	563	390	902	0
Adj No. of Lanes	1	0	2				0	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	442	0	789				0	1196	942	843	2261	0
Arrive On Green	0.25	0.00	0.25				0.00	0.11	0.11	0.49	1.00	0.00
Sat Flow, veh/h	1774	0	3167				0	3632	2787	3442	3632	0
Grp Volume(v), veh/h	269	0	664				0	1134	563	398	902	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1770	1393	1721	1770	0
Q Serve(g_s), s	13.4	0.0	19.9				0.0	31.8	19.2	7.7	0.0	0.0
Cycle Q Clear(g_c), s	13.4	0.0	19.9				0.0	31.8	19.2	7.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00	1.00	1.00	1.00	0.00	
Lane Grp Cap(c), veh/h	442	0	789				0	1196	942	843	2261	0
V/C Ratio(X)	0.61	0.00	0.84				0.00	0.95	0.60	0.47	0.40	0.00
Avail Cap(c_a), veh/h	585	0	1045				0	1196	942	843	2261	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.69	0.69	0.88	0.88	0.00
Uniform Delay (d), s/veh	33.2	0.0	35.7				0.0	43.5	38.0	21.2	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	4.9				0.0	12.4	1.9	0.4	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	0.0	9.2				0.0	17.6	7.7	3.6	0.1	0.0
LnGrp Delay(d), s/veh	34.6	0.0	40.5				0.0	55.9	39.9	21.6	0.5	0.0
LnGrp LOS	C		D					E	D	C	A	
Approach Vol, veh/h		933						1697			1300	
Approach Delay, s/veh		38.8						6.9			6.9	
Approach LOS		D						D			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	39.4			30.5		69.5						
Change Period (Y+Rc), s	5.6			5.6		5.6						
Max Green Setting (Gmax), s	33.0			33.0		55.8						
Max Q Clear Time (g_c+I1), s	33.8			21.9		2.0						
Green Ext Time (p_c), s	0.9	0.0		3.0		8.1						
Intersection Summary												
HCM 2010 Ctrl Delay		33.4										
HCM 2010 LOS		C										
Notes												

Harmony Grove Parcel 06/19/2014 Existing PM
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HCM 2010 Signalized Intersection Summary
3: Auto Park Way/Nordahl Rd & E Mission Rd

Existing PM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	485	174	37	362	438	327	907	44	172	487	358
Future Volume (veh/h)	311	485	174	37	362	438	327	907	44	172	487	358
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	338	527	189	40	393	0	355	986	48	187	529	389
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	710	318	167	528	236	379	1576	491	829	1494	698
Arrive On Green	0.10	0.20	0.20	0.05	0.15	0.00	0.11	0.31	0.31	0.08	0.15	0.15
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3390	1583
Grp Volume(v), veh/h	338	527	189	40	393	0	355	986	48	187	529	389
Grp Sat Flow(s), veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	9.8	14.0	8.0	1.1	10.6	0.0	10.2	16.6	2.2	5.1	14.1	22.8
Cycle Q Clear(g_c), s	9.8	14.0	8.0	1.1	10.6	0.0	10.2	16.6	2.2	5.1	14.1	22.8
Prop In Lane	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	344	710	318	167	528	236	379	1576	491	829	1494	698
V/C Ratio(X)	0.98	0.74	0.59	0.24	0.74	0.00	0.94	0.63	0.10	0.23	0.35	0.56
Avail Cap(c_a), veh/h	344	1239	554	167	1026	459	379	1576	491	829	1494	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	0.89
Uniform Delay (d), s/veh	44.9	37.5	19.7	45.8	40.7	0.0	44.2	29.5	24.5	37.3	29.9	33.7
Incr Delay (d2), s/veh	43.5	1.6	1.8	0.7	2.1	0.0	30.8	1.9	0.4	0.1	0.6	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	7.0	3.6	0.6	0.3	0.0	6.5	8.0	1.0	2.5	6.7	10.6
LnGrp Delay(d), s/veh	88.4	39.1	21.5	46.5	42.8	0.0	74.9	31.4	24.9	37.4	30.5	36.5
LnGrp LOS	F	D	C	D	D		E	C	C	D	C	D
Approach Vol, veh/h		1054			433		1389			1105		
Approach Delay, s/veh		51.8			42.2		42.3			33.8		
Approach LOS		D			D		D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.0	9.9	25.1	16.0	49.1	15.0	19.9					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
Max Green Setting (Gmax), s	31.0	4.0	35.0	11.0	30.0	10.0	29.0					
Max Q Clear Time (g_c+I1), s	18.6	3.1	16.0	12.2	24.8	11.8	12.6					
Green Ext Time (p_c), s	0.2	5.6	0.0	4.1	0.0	2.7	0.0	2.3				
Intersection Summary												
HCM 2010 Ctrl Delay		42.5										
HCM 2010 LOS		D										

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HCM 2010 Signalized Intersection Summary
4: Auto Park Way & Country Club Dr

Existing PM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	0	38	0	0	1	68	915	1	80	648	211
Future Volume (veh/h)	221	0	38	0	0	1	68	915	1	80	648	211
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	240	0	41	0	0	1	74	995	1	87	704	229
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	377	320	103	0	320	95	2041	2	113	1504	489
Arrive On Green	0.20	0.00	0.20	0.00	0.00	0.20	0.05	0.56	0.06	0.57	0.57	0.57
Sat Flow, veh/h	1410	1863	1583	1360	0	1583	1774	3628	4	1774	2627	854
Grp Volume(v), veh/h	240	0	41	0	0	1	74	485	511	87	474	459
Grp Sat Flow(s), veh/h/ln	1410	1863	1583	1360	0	1583	1774	1770	1862	1774	1770	1712
Q Serve(g_s), s	11.4	0.0	1.5	0.0	0.0	0.0	2.9	11.5	11.5	3.4	10.9	10.9
Cycle Q Clear(g_c), s	11.5	0.0	1.5	0.0	0.0	0.0	2.9	11.5	11.5	3.4	10.9	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.50	
Lane Grp Cap(c), veh/h	387	377	320	103	0	320	95	996	1048	113	1013	980
V/C Ratio(X)	0.62	0.00	0.13	0.00	0.00	0.00	0.78	0.49	0.49	0.77	0.47	0.47
Avail Cap(c_a), veh/h	688	773	657	393	0	657	228	996	1048	254	1013	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	22.8	0.0	0.0	22.3	32.7	9.2	9.2	32.2	8.7	8.7
Incr Delay (d2), s/veh	1.6	0.0	0.2	0.0	0.0	0.0	12.6	1.7	1.6	10.6	1.6	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	0.7	0.0	0.0	0.0	1.7	6.0	6.3	2.0	5.7	5.5
LnGrp Delay(d), s/veh	28.5	0.0	23.0	0.0	0.0	22.3	45.3	10.9	10.8	42.9	10.3	10.3
LnGrp LOS	C		C			C	D	B	B	D	B	B
Approach Vol, veh/h	281				1		1070			1020		
Approach Delay, s/veh	27.7				22.3		13.3			13.1		
Approach LOS	C				C		B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	43.3			18.1	7.8	4.0				18.1		
Change Period (Y+Rc), s	4.0			4.0		4.0				4.0		
Max Green Setting (Gmax), s	39.0			29.0	9.0	4.0				29.0		
Max Q Clear Time (g_c+1), s	6			13.5		4.9				13.5		
Green Ext Time (p_c), s	0.1			7.2		0.7				7.0		
Intersection Summary												
HCM 2010 Ctrl Delay	14.9											
HCM 2010 LOS	B											

HCM 2010 TWSC
6: Citracado Pkwy & Avenida del Diablo

Existing PM
11/20/2017

Intersection													
Int Delay, s/veh 2.2													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	0	0	1	0	0	154	19	153	61	0	358	0	
Future Vol, veh/h	0	0	1	0	0	154	19	153	61	0	358	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	0	-	-	0	150	-	150	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	0	-	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	1	0	0	167	21	166	66	0	389	0	
Major/Minor													
Minor2	Minor1			Major1			Major2						
Conflicting Flow All	-	-	195	-	-	83	389	0	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	814	0	0	960	1166	-	-	0	-	-	-
Stage 1	0	0	-	0	0	-	-	-	-	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	814	-	-	960	1166	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Approach													
EB	WB			NB			SB						
HCM Control Delay, s	9.4	9.5			0.7			0					
HCM LOS	A	A											
Minor Lane/Major Mvmt													
NBL	NBT	NBR	EBL1WBL1	NBL	SBT	SBR							
Capacity (veh/h)	1166	-	-	814	960	-	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.018	-	-	0.001	0.174	-	-	-	-	-	-	-	-
HCM Control Delay (s)	8.1	-	-	9.4	9.5	-	-	-	-	-	-	-	-
HCM Lane LOS	A	-	-	A	A	-	-	-	-	-	-	-	-
HCM 95th %tile O(veh)	0.1	-	-	0	0.6	-	-	-	-	-	-	-	-

Harmony Grove Parcel 06/19/2014 Existing PM
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HCM 2010 Signalized Intersection Summary
8: Shopping Ctr Dwy/I-15 SB Ramps & Valley Pkwy

Existing PM
11/20/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	78	1201	77	160	736	330	40	36	243	225	123	327	
Future Volume (veh/h)	78	1201	77	160	736	330	40	36	243	225	123	327	
Number	5	2	12	1	6	16	3	8	18	7	4	14	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj (A_pbT)	1.00	0.99	1.00	1.00	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	
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	
Adj Flow Rate, veh/h	85	1305	84	174	727	408	43	39	264	245	134	355	
Adj No. of Lanes	2	3	1	2	3	2	1	1	1	0	2	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	132	2066	639	272	2485	1408	218	229	194	295	161	400	
Arrive On Green	0.04	0.41	0.41	0.08	0.44	0.44	0.12	0.12	0.12	0.25	0.25	0.25	
Sat Flow, veh/h	3442	5085	1574	3548	5588	3167	1774	1863	1579	1166	638	1580	
Grp Volume(V), veh/h	85	1305	84	174	727	408	43	39	264	245	134	355	
Grp Sat Flow(s),veh/h/ln	1721	1695	1574	1774	1863	1583	1774	1863	1579	1804	0	1580	
Q Serve(g_s), s	3.2	26.6	4.4	6.2	10.8	10.7	2.8	2.4	16.0	25.8	0.0	28.1	
Cycle Q Clear(g_c), s	3.2	26.6	4.4	6.2	10.8	10.7	2.8	2.4	16.0	25.8	0.0	28.1	
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.65	1.00	1.00	
Lane Grp Cap(c), veh/h	132	2066	639	272	2485	1408	218	229	194	457	0	400	
V/C Ratio(X)	0.65	0.63	0.13	0.64	0.29	0.29	0.20	0.17	1.36	0.83	0.00	0.89	
Avail Cap(c_a), veh/h	228	2066	639	330	2485	1408	218	229	194	512	0	448	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.43	0.43	0.43	1.00	1.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	61.6	30.8	24.2	58.3	23.0	23.0	51.2	51.1	57.0	45.9	0.0	46.8	
Incr Delay (d2), s/veh	5.2	1.5	0.4	1.3	0.0	0.0	0.4	0.3	190.8	10.1	0.0	17.8	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.6	12.7	2.0	3.1	5.5	4.7	1.4	1.3	17.3	14.1	0.0	14.2	
LnGrp Delay (d),s/veh	66.8	32.3	24.6	59.5	23.1	23.1	51.7	51.4	247.8	56.0	0.0	64.5	
LnGrp LOS	E	C	C	E	C	C	D	D	F	E		E	
Approach Vol, veh/h	1474			1309			346			734			
Approach Delay, s/veh	33.9			27.9			201.3			60.1			
Approach LOS	C			C			F			E			
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	1	2		4	5	6		8					
Phs Duration (G+Y+Rc), s	14.2	58.3		37.5	9.2	63.3		20.0					
Change Period (Y+Rc), s	*4.2	5.5		4.6	*4.2	5.5		4.0					
Max Green Setting (Gmax), s	*12	46.7		36.9	*8.6	50.2		16.0					
Max Q Clear Time (g_c+I1), s	8.2	28.6		30.1	5.2	12.8		18.0					
Green Ext Time (p_c), s	0.2	8.5		2.6	0.1	7.3		0.0					

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HCM 2010 Signalized Intersection Summary
7: I-15 NB Ramps & Valley Pkwy

Existing PM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	779	890	0	0	1016	275	210	1	298	0	0	0
Future Volume (veh/h)	779	890	0	0	1016	275	210	1	298	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	847	967	0	0	1104	299	228	1	324			
Adj No. of Lanes	2	3	0	0	3	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	903	2853	0	0	1315	407	606	3	538			
Arrive On Green	0.26	0.56	0.00	0.00	0.26	0.26	0.34	0.34	0.34			
Sat Flow, veh/h	3442	5253	0	0	5253	1574	1767	8	1569			
Grp Volume(v), veh/h	847	967	0	0	1104	299	229	0	324			
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1574	1774	0	1569			
Q Serve(g, s)	25.3	10.8	0.0	0.0	21.6	18.3	10.2	0.0	17.9			
Cycle Q Clear(g, c, s	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Prop In Lane	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Lane Grp Cap(c), veh/h	903	2853	0	0	1315	407	608	0	538			
V/C Ratio(X)	0.94	0.34	0.00	0.00	0.84	0.73	0.38	0.00	0.60			
Avail Cap(c, a), veh/h	914	2853	0	0	1315	407	608	0	538			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(f)	0.78	0.78	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.9	12.5	0.0	0.0	36.9	35.6	26.0	0.0	28.6			
Incr Delay (d2), s/veh	13.9	0.3	0.0	0.0	6.6	11.2	1.8	0.0	4.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.7	5.1	0.0	0.0	10.9	9.2	5.3	0.0	8.5			
LnGrp Delay(d),s/veh	51.8	12.7	0.0	0.0	43.4	46.8	27.8	0.0	33.5			
LnGrp LOS	D	B			D	D	C		C			
Approach Vol, veh/h	1814				1403			553				
Approach Delay, s/veh	31.0				44.1			31.1				
Approach LOS	C				D			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2				5	6		8				
Phs Duration (G+Y+Rc), s	64.4				31.7	32.7		40.6				
Change Period (Y+Rc), s	5.5				* 4.2	5.5		4.6				
Max Green Setting (Gmax), s	58.9				* 28	26.8		36.0				
Max Q Clear Time (t_c+I1), s	12.8				27.3	23.6		19.9				
Green Ext Time (p_c), s	7.5				0.3	2.2		2.3				
Intersection Summary												
HCM 2010 Ctrl Delay												
HCM 2010 LOS												
Notes												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	456	15	152	216	73	23	925	196	107	713	185
Future Volume (veh/h)	285	456	15	152	216	73	23	925	196	107	713	185
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Cb), 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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	310	496	16	165	235	79	25	1005	213	116	775	201
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	747	24	204	350	115	38	1490	315	130	1639	421
Arrive On Green	0.19	0.21	0.21	0.11	0.13	0.13	0.02	0.35	0.35	0.07	0.43	0.41
Sat Flow, veh/h	1774	3500	113	1774	2622	859	1774	4206	890	1774	4031	1037
Grp Volume(v), veh/h	310	251	261	165	157	157	25	810	408	116	650	326
Grp Sat Flow(s), veh/h/ln	1774	1774	1774	1774	1774	1774	1774	1774	1774	1774	1774	1774
Q (Service), s	14.0	10.6	10.6	7.4	6.9	7.2	1.1	16.6	16.6	5.3	11.5	11.7
Cycle Q Clear(q_c), s	14.0	10.6	10.6	7.4	6.9	7.2	1.1	16.6	16.6	5.3	11.5	11.7
Prop In Lane	1.00	1.00	0.06	1.00	0.50	1.00	0.50	1.00	0.52	1.00	0.62	1.00
Lane Grp Cap(c), veh/h	346	378	393	204	236	228	38	1201	604	130	1377	682
Cr Ratio(X)	0.90	0.66	0.66	0.81	0.66	0.69	0.67	0.67	0.68	0.89	0.47	0.48
Avail Cap(c_a), veh/h	347	648	675	325	627	606	108	1201	604	130	1377	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	29.5	29.5	35.4	33.7	33.9	39.8	22.4	22.4	37.6	17.9	17.9
Incrr Delay (d2), s/veh	24.7	2.0	1.9	7.9	3.2	3.7	18.3	3.0	6.0	47.9	1.2	2.4
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/2	5.4	5.7	4.1	3.6	3.6	3.6	0.7	8.3	8.8	4.3	5.6	5.9
LnGrp Delay(d), s/veh	56.8	31.5	31.5	43.2	36.9	37.5	58.1	25.5	28.4	85.5	19.0	20.3
LnGrp LOS	E	C	C	D	D	D	E	C	C	F	B	C
Approach Vol, veh/h	822			479			1243			1092		
Approach Delay, s/veh	41.0			39.3			27.1			26.5		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	34.0	14.4	22.5	6.7	38.3	21.0	5.0	15.9			
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Max Green Setting (G_max), s	29.0	15.0	30.0	5.0	30.0	16.0	29.0					
Max Q Clear Time (q_c12), s	18.6	9.4	12.6	3.1	13.7	16.0	9.2					
Green Ext Time (p_c), s	0.0	5.8	0.2	2.8	0.0	6.1	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay	31.7											
HCM 2010 LOS	C											

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	20	13	10	15	31	17	1072	10	61	685	84
Future Volume (veh/h)	49	20	13	10	15	31	17	1072	10	61	685	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	53	22	14	11	16	34	18	1165	11	66	745	91
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	60	38	80	24	51	31	1798	17	84	1877	840
Arrive On Green	0.06	0.06	0.06	0.05	0.05	0.05	0.02	0.50	0.50	0.05	0.53	0.53
Sat Flow, veh/h	1774	1065	678	1774	532	1131	1774	3592	34	1774	3539	1583
Grip Volume(v), veh/h	53	0	36	11	0	50	18	574	602	66	745	91
Grip Sat Flow(s), veh/h/ln/1774	0	1743	1774	0	1663	1774	1770	1057	1774	1770	1583	1583
Q Served, s)	1.5	0.0	1.0	0.3	0.0	1.5	0.5	12.3	12.3	1.9	6.4	1.5
Cycle Q Clear(q_c), s	1.5	0.0	1.0	0.3	0.0	1.5	0.5	12.3	12.3	1.9	6.4	1.5
Prop Ln Lane	1.00	0.39	1.00		0.68	1.00		0.02	1.00		1.00	
Lane Grp Cap(c), veh/h	99	0	98	80	0	75	31	886	929	84	1877	840
Y/C Ratio(Q)	0.53	0.00	0.37	0.14	0.00	0.66	0.58	0.65	0.65	0.78	0.40	0.11
Avail Cap(c_a), veh/h	553	0	543	553	0	518	138	886	929	149	1877	840
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	23.4	23.5	0.0	24.1	25.0	9.5	9.5	24.2	7.2	6.0
Incr Delay (d2), s/veh	4.4	0.0	2.3	0.8	0.0	9.6	15.6	3.7	3.5	14.5	0.6	0.3
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/6	0.0	0.6	0.2	0.0	0.9	0.4	6.8	7.1	13.1	3.3	3.3	0.7
LnGrp Delay(d),s/veh	28.0	0.0	25.7	24.3	0.0	33.7	40.6	13.1	13.0	38.7	7.8	6.3
LnGrp LOS	C		C	C		C	D	B	B	D	A	A
Approach Vol, veh/h	89				61				1194			
Approach Delay, s/veh	27.0				32.0				13.5			
Approach LOS	C				C				B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2			7.4	5.4	31.7		6.8				
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.7			16.0	4.0	26.0		16.0				
Max Q Clear Time (q_c+13), s	14.3			3.5	2.5	8.4		3.5				
Green Ext Time (p_c), s	0.0	5.9		0.2	0.0	5.2		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay	13.1											
HCM 2010 LOS	B											

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	9	264	20	4	56	300	893	26	64	449	196
Future Volume (veh/h)	75	9	264	20	4	56	300	893	26	64	449	196
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Cb), 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	82	10	205	22	4	61	326	971	28	70	488	213
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	289	246	34	214	182	375	1956	56	90	953	414
Arrive On Green	0.06	0.16	0.16	0.02	0.11	0.11	0.21	0.56	0.56	0.05	0.40	0.40
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3513	101	1774	2405	1044
Grp Volume(v), veh/h	82	10	205	22	4	61	326	489	510	70	358	343
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1770	1679
Q Serve(g_s), s	3.8	0.4	10.4	1.0	0.2	2.9	14.7	14.0	14.0	3.2	12.7	12.8
Q Clear(g_c), s	3.8	0.4	10.4	1.0	0.2	2.9	14.7	14.0	14.0	3.2	12.7	12.8
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.00	0.62	
Lane Grp Cap(c), veh/h	106	289	246	34	214	182	375	995	1027	90	702	666
V/C Ratio(x)	0.77	0.03	0.83	0.65	0.02	0.34	0.87	0.50	0.50	0.77	0.51	0.51
Avail Cap(c_a), veh/h	225	478	406	114	361	307	612	985	1027	204	702	666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	29.6	33.9	40.2	32.4	33.7	31.5	11.2	11.2	38.7	18.9	18.9
Incr Delay (d2), s/veh	11.3	0.0	7.5	18.7	0.0	1.1	7.6	1.8	1.7	13.1	2.6	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln/2	0.2	5.1	0.7	0.1	0.3	1.3	7.9	7.3	7.6	1.9	6.7	6.7
LnGrp Delay(d),s/veh	49.6	29.7	41.3	58.9	32.5	34.8	39.1	13.0	12.9	51.9	21.5	21.4
LnGrp LOS	D	C	D	E	C	C	D	B	B	D	C	C
Approach Vol, veh/h		297			87			1325			771	
Approach Delay, s/veh		43.2			40.8			19.4			24.4	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 					 		
Traffic Volume (veh/h)	0	817	871	254	1051	0	0	0	0	333	0	103
Future Volume (veh/h)	0	817	871	254	1051	0	0	0	0	333	0	103
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbtt)	1.00		0.99	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
Adj Sat Flow, veh/hln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	851	907	306	1181	0				374	0	124
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.96	0.96	0.83	0.89	0.92				0.89	0.92	0.83
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	1665	740	340	2510	0				484	0	216
Arrive On Green	0.00	0.49	0.49	0.20	0.74	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	3463	1499	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	851	907	306	1181	0				374	0	124
Grp Sat Flow(s), veh/hln	0	1687	1499	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	14.5	42.0	15.0	11.7	0.0				9.1	0.0	6.5
Cycle Q Clear(g_c), s	0.0	14.5	42.0	15.0	11.7	0.0				9.1	0.0	6.5
Ln In Lane	0.0	1.00	1.00	1.00	0.00	0.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1665	740	340	2510	0				484	0	216
V/C Ratio(Q)	0.00	0.51	1.23	0.90	0.47	0.00				0.77	0.00	0.57
Aval Cap(c_a), veh/h	0	1665	740	354	2510	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.75	0.75	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.00	14.6	21.5	33.1	4.3	0.00				35.1	0.00	34.0
Incr Delay (d2), s/veh	0.0	1.1	113.6	19.7	0.5	0.00				3.1	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.00				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0	0.0	7.0	40.6	8.8	5.6	0.0				4.4	0.0	2.9
LnGrp Delay(d),s/veh	0.0	15.7	135.1	52.8	4.8	0.00				38.2	0.00	36.4
LnGrp LOS		B	F	D	A	A				D		D
Approach Vol, veh/h		1758			1487					498		
Approach Delay, s/veh		77.3			14.6					37.7		
Approach LOS		E			B					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.0	48.7	16.9	16.8		68.2						
Change Period (Y+Rc), s Δ2	5.0		5.0		4.6	5.0						
Max Green Setting (Gmax)ls	35.4	18.0		18.0		49.4						
Max Q Clear Time (g_c+Ht)ls	44.0			11.1		13.7						
Green Ext Time (p,c), s	0.1	0.0		1.1		11.3						
Intersection Summary												
HCM 2010 Ctrl Delay		47.2										
HCM 2010 LOS		D										

HCM 2010 Signalized Intersection Summary
14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Existing PM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	170	980	0	0	735	405	570	5	257	0	0	0
Future Volume (veh/h)	170	980	0	0	735	405	570	5	257	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776			
Adj Flow Rate, veh/h	205	1065	0	0	875	431	606	0	299			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86			
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			
Cap, veh/h	287	2189	0	0	1728	772	805	0	359			
Arrive On Green	0.17	1.00	0.00	0.00	0.51	0.51	0.24	0.00	0.24			
Sat Flow, veh/h	3281	3463	0	0	3463	1507	3382	0	1509			
Grp Volume(v), veh/h	205	1065	0	0	875	431	606	0	299			
Grp Sat Flow(s), veh/h/ln	1640	1687	0	0	1687	1507	1691	0	1509			
Q Serve(g_s), s	5.0	0.0	0.0	0.0	14.5	16.6	14.1	0.0	16.0			
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.0	14.5	16.6	14.1	0.0	16.0			
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	287	2189	0	0	1728	772	805	0	359			
V/C Ratio(X)	0.71	0.49	0.00	0.00	0.51	0.56	0.75	0.00	0.83			
Avail Cap(c_a), veh/h	610	2189	0	0	1728	772	1011	0	451			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.79	0.79	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.1	0.0	0.0	0.0	13.7	14.2	30.1	0.0	30.8			
Incr Delay (d2), s/veh	2.6	0.6	0.0	0.0	0.2	0.9	2.5	0.0	10.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/h	0.0	0.0	0.0	0.0	6.7	7.0	6.8	0.0	7.7			
LnGrp Delay(d), s/veh	36.7	0.6	0.0	0.0	13.9	15.1	32.5	0.0	41.1			
LnGrp LOS	D	A			B	B	C		D			
Approach Vol, veh/h	1270				1306			905				
Approach Delay, s/veh	6.4				14.3			35.3				
Approach LOS	A				B			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				5	6	8				
Phs Duration (G+Y+Rc), s		60.2				11.6	48.5	24.8				
Change Period (Y+Rc), s		5.0				*4.2	5.0	4.6				
Max Green Setting (Gmax), s		50.0				*16	30.0	25.4				
Max Q Clear Time (g_c+I1), s		2.0				7.0	18.6	18.0				
Green Ext Time (p_c), s		10.3				0.4	5.9	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay						16.9						
HCM 2010 LOS						B						
Notes												

Harmony Grove Parcel 06/19/2014 Existing PM
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Synchro 10 Report
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HCM 2010 AWSC
16: Harmony Grove Village Pkwy & Country Club Dr

Existing PM
11/20/2017

Intersection						
Intersection Delay, s/veh11.2						
Intersection LOS B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	171	169	280	9	21	144
Future Vol, veh/h	171	169	280	9	21	144
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	186	184	304	10	23	157
Number of Lanes	1	1	1	1	1	1
Approach	EB	WB	SB			
Opposing Approach	WB	EB				
Opposing Lanes	2	2	0			
Conflicting Approach Left	SB		WB			
Conflicting Lanes Left	2	0	2			
Conflicting Approach Right		SB	EB			
Conflicting Lanes Right	0	2	2			
HCM Control Delay	10.7	12.6	10			
HCM LOS	B	B	A			
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	171	169	280	9	21	144
LT Vol	171	0	0	0	21	0
Through Vol	0	169	280	0	0	0
RT Vol	0	0	0	9	0	144
Lane Flow Rate	186	184	304	10	23	157
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.301	0.272	0.458	0.013	0.042	0.238
Departure Headway (Hd)	5.837	5.333	5.422	4.716	6.684	5.472
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	612	667	657	750	532	650
Service Time	3.622	3.117	3.207	2.501	4.476	3.263
HCM Lane V/C Ratio	0.304	0.276	0.463	0.013	0.043	0.242
HCM Control Delay	11.2	10.1	12.8	7.6	9.8	10
HCM Lane LOS	B	B	B	A	A	A
HCM 95th-ile Q	1.3	1.1	2.4	0	0.1	0.9

Harmony Grove Parcel 06/19/2014 Existing PM
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Synchro 10 Report
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HCM 2010 AWSC
15: Kauana Loa Dr & Country Club Dr

Existing PM
11/20/2017

Intersection						
Intersection Delay, s/veh 8.8						
Intersection LOS A						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕			↕
Traffic Vol, veh/h	8	92	112	6	83	154
Future Vol, veh/h	8	92	112	6	83	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	100	122	7	90	167
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left NB					WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right SB			WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay	7.9		8.3		9.4	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	8%	35%			
Vol Thru, %	95%	0%	65%			
Vol Right, %	5%	92%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	118	100	237			
LT Vol	0	8	83			
Through Vol	112	0	154			
RT Vol	6	92	0			
Lane Flow Rate	128	109	258			
Geometry Grp	1	1	1			
Degree of Utl (X)	0.157	0.129	0.315			
Departure Headway (Hd)	4.416	4.261	4.398			
Convergence, Y/N	Yes	Yes	Yes			
Cap	813	842	822			
Service Time	2.437	2.282	2.398			
HCM Lane V/C Ratio	0.157	0.129	0.314			
HCM Control Delay	8.3	7.9	9.4			
HCM Lane LOS	A	A	A			
HCM 95th-ile Q	0.6	0.4	1.4			

Intersection						
Int Delay, s/veh	10.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↵		↵	↵	↵	↵
Traffic Vol, veh/h	56	25	255	74	18	514
Future Vol, veh/h	56	25	255	74	18	514
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	27	277	80	20	559

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	88	0	709 75
Stage 1	-	-	-	-	75 -
Stage 2	-	-	-	-	634 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1508	-	401 986
Stage 1	-	-	-	-	948 -
Stage 2	-	-	-	-	529 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1508	-	324 986
Mov Cap-2 Maneuver	-	-	-	-	324 -
Stage 1	-	-	-	-	766 -
Stage 2	-	-	-	-	529 -

Approach	EB	WB	NB
HCM Control Delay, s	0	6.1	15.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1508	-
HCM Lane V/C Ratio	0.627	-	-	0.184	-
HCM Control Delay (s)	15.2	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	4.6	-	-	0.7	-

HCM 2010 Signalized Intersection Summary
1: SR 78 WB Ramps & Nordahl Rd

Existing + Proj AM
02/09/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	0	0	0	442	7	145	417	492	0	0	565	297	
Future Volume (veh/h)	0	0	0	442	7	145	417	492	0	0	565	297	
Number				3	8	18	5	2	12	1	6	16	
Initial Q (Qb), veh				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	
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863	
Adj Flow Rate, veh/h				532	0	108	453	535	0	0	614	323	
Adj No. of Lanes				2	0	1	2	2	0	0	3	1	
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2	
Cap, veh/h				662	0	295	1313	2482	0	0	1343	418	
Arrive On Green				0.19	0.00	0.19	0.13	0.23	0.00	0.00	0.26	0.26	
Sat Flow, veh/h				3548	0	1583	3442	3632	0	0	5253	1583	
Grp Volume(v), veh/h				532	0	108	453	535	0	0	614	323	
Grp Sat Flow(s),veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583	
Q Serve(g_s), s				14.3	0.0	6.0	12.0	12.2	0.0	0.0	10.1	18.9	
Cycle Q Clear(g_c), s				14.3	0.0	6.0	12.0	12.2	0.0	0.0	10.1	18.9	
Prop In Lane				1.00	1.00	1.00	1.00		0.00	0.00		1.00	
Lane Grp Cap(c), veh/h				662	0	295	1313	2482	0	0	1343	418	
V/C Ratio(X)				0.80	0.00	0.37	0.35	0.22	0.00	0.00	0.46	0.77	
Avail Cap(c_a), veh/h				1327	0	592	1313	2482	0	0	1343	418	
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00	
Upstream Filter(I)				1.00	0.00	1.00	0.86	0.86	0.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh				38.9	0.0	35.5	32.3	16.2	0.0	0.0	30.8	34.0	
Incr Delay (d2), s/veh				2.3	0.0	0.8	0.1	0.2	0.0	0.0	1.1	13.0	
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln				7.2	0.0	2.7	5.8	6.1	0.0	0.0	4.9	9.8	
LnGrp Delay(d),s/veh				41.3	0.0	36.3	32.4	16.3	0.0	0.0	31.9	47.0	
LnGrp LOS				D		D	C	B			C	D	
Approach Vol, veh/h				640				988				937	
Approach Delay, s/veh				40.4				23.7				37.1	
Approach LOS				D				C				D	
Timer	1	2	3	4	5	6	7	8					
Assigned Phs		2				6		8					
Phs Duration (G+Y+Rc), s		75.7			43.7	32.0		24.3					
Change Period (Y+Rc), s		5.6			5.6	* 5.6		5.6					
Max Green Setting (Gmax), s		51.4			19.8	* 26		37.4					
Max Q Clear Time (g_c+I1), s		14.2			14.0	20.9		16.3					
Green Ext Time (p_c), s		4.1			0.9	2.6		2.3					

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	83	4	151	145	20	1	463	343	20	148	123
Future Volume (veh/h)	84	83	4	151	145	20	1	463	343	20	148	123
Number	7	4	14	3	8	18	5	2	12	1	6	1
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	90	4	164	158	22	1	503	373	22	161	134
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	152	7	211	221	31	3	927	788	36	963	818
Arrive On Green	0.07	0.09	0.09	0.12	0.14	0.14	0.00	0.50	0.50	0.02	0.52	0.52
Sat Flow, veh/h	1774	1770	79	1774	1601	223	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	91	0	94	164	0	180	1	503	373	22	161	134
Grp Sat Flow(s), veh/h/ln	1774	0	1849	1774	0	1823	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.3	0.0	3.2	5.8	0.0	6.1	0.0	12.1	10.0	0.8	3.0	2.9
Cycle Q Clear(g_c), s	3.3	0.0	3.2	5.8	0.0	6.1	0.0	12.1	10.0	0.8	3.0	2.9
Prop In Lane	1.00	0.04	1.00	1.00	0.12	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	118	0	159	211	0	252	3	927	788	36	963	818
V/C Ratio(X)	0.77	0.00	0.59	0.78	0.00	0.71	0.37	0.54	0.47	0.61	0.17	0.16
Avail Cap(c_a), veh/h	279	0	456	539	0	716	109	927	788	109	963	818
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	28.6	27.8	0.0	26.7	32.4	11.2	10.7	31.5	8.3	8.3
Incr Delay (d2), s/veh	10.2	0.0	3.5	6.1	0.0	3.7	66.5	2.3	2.0	15.9	0.4	0.4
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	1.9	0.0	1.8	3.2	0.0	3.4	0.1	6.7	4.8	0.5	1.6	1.3
LnGrp Delay(d),s/veh	40.0	0.0	32.1	33.8	0.0	30.5	98.9	13.5	12.7	47.4	8.7	8.7
LnGrp LOS	D		C	C		C	F	B	B	D	A	A
Approach Vol, veh/h	185			344			877			317		
Approach Delay, s/veh	36.0			32.1			13.3			11.4		
Approach LOS	D			C			B			B		

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: Nordahl Rd & SR 78 EB Ramps

Existing + Proj AM
02/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	137	687	0	0	0	0	661	414	189	818	0
Future Volume (veh/h)	248	137	687	0	0	0	0	661	414	189	818	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qt), veh	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	
Adj Sat Flow, veh/h/ln	1863	1863	1863			0	1863	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	230	0	890			0	718	450	205	889	0	
Adj No. of Lanes	1	0	2			0	2	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92			0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2			2	2	2	2	2	2	2
Cap, veh/h	578	0	1031			0	1527	1203	271	1990	0	
Arrive On Green	0.33	0.00	0.33			0.00	0.29	0.29	0.16	1.00	0.00	
Sat Flow, veh/h	1774	0	3167			0	3632	2787	3424	3632	0	
Grp Volume(v), veh/h	230	0	890			0	718	450	205	889	0	
Grp Sat Flow(s), veh/h/ln	1774	0	1583			0	1770	1393	1721	1770	0	
Q Serve(g_s), s	10.0	0.0	26.4			0.0	16.7	12.9	5.7	0.0	0.0	
Cycle Q Clear(g_c), s	10.0	0.0	26.4			0.0	16.7	12.9	5.7	0.0	0.0	
Drop In Lane	1.00	1.00	1.00			0.00	1.00	1.00	1.00	1.00	0.00	
Lane Grp Cap(c), veh/h	578	0	1031			0	1527	1203	271	1990	0	
V/C Ratio(X)	0.40	0.00	0.86			0.00	0.47	0.37	0.76	0.45	0.00	
Avail Cap(c_a), veh/h	752	0	1343			0	1527	1203	382	1990	0	
HCM Platoon Ratio	1.00	1.00	1.00			1.00	0.67	0.67	2.00	2.00	1.00	
Upstream Filter(f)	1.00	1.00	1.00			0.00	0.89	0.89	0.92	0.92	0.00	
Uniform Delay (d), s/veh	26.1	0.0	31.6			0.0	26.1	24.8	41.2	0.0	0.0	
Incr Delay (d2), s/veh	0.4	0.0	4.8			0.0	0.9	0.8	5.0	0.7	0.0	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%), veh/ln	0.0	0.0	12.2			0.0	8.4	5.1	2.9	0.2	0.0	
LnGrp Delay(d), s/veh	26.6	0.0	36.4			0.0	27.1	25.6	46.2	0.7	0.0	
LnGrp LOS	C		D				C	D	D	A		
Approach Vol, veh/h	1120						1168			1094		
Approach Delay, s/veh	34.4						26.5			9.2		
Approach LOS	C						C			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6						
Phs Duration (G+Y+Rc), s	33.1	48.8		38.2		61.8						
Change Period (Y+Rc), s	5.2	5.6		5.6		5* 5.6						
Max Green Setting (Gmax), s	13.1	30.1		42.4		4* 7						
Max Q Clear Time (g_c +t1), s	18.7			28.4		2.0						
Green Ext Time (g_c), s	0.2	5.2		4.2		7.8						

HCM 2010 Signalized Intersection Summary
3: Auto Park Way/Nordahl Rd & E Mission Rd

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	294	168	63	339	205	207	603	30	364	774	245
Future Volume (veh/h)	260	294	168	63	339	205	207	603	30	364	774	245
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	283	320	183	68	368	0	225	655	33	396	841	266
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	734	328	117	500	224	856	2180	679	447	1189	374
Arrive On Green	0.10	0.21	0.21	0.03	0.14	0.00	0.25	0.43	0.43	0.09	0.21	0.21
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3835	1206
Grp Volume(v), veh/h	283	320	183	68	368	0	225	655	33	396	743	364
Grp Sat Flow(s), veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1650
Q Serve(g_s), s	8.1	7.9	5.8	1.9	10.0	0.0	5.3	8.4	1.2	11.4	20.4	20.5
Cycle Q Clear(g_c), s	8.1	7.9	5.8	1.9	10.0	0.0	5.3	8.4	1.2	11.4	20.4	20.5
Prop In Lane	1.00		1.00		1.00		1.00		1.00		1.00	0.73
Lane Grp Cap(c), veh/h	344	734	328	117	500	224	856	2180	679	447	1051	511
V/C Ratio(X)	0.82	0.44	0.56	0.58	0.74	0.00	0.26	0.30	0.05	0.89	0.71	0.71
Avail Cap(c_a), veh/h	344	1168	523	172	1026	459	856	2180	679	447	1051	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	44.1	34.5	11.1	47.6	41.1	0.0	30.2	18.7	16.7	44.9	35.4	35.5
Incr Delay (d2), s/veh	14.7	0.4	1.5	4.5	2.1	0.0	0.2	0.4	0.1	15.6	3.2	6.6
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	5	3.9	2.6	1.0	5.0	0.0	2.5	4.0	0.6	6.4	10.0	10.3
LnGrp Delay(d),s/veh	58.9	34.9	12.6	52.1	43.3	0.0	30.4	19.1	16.8	60.5	38.6	42.1
LnGrp LOS	E	C	B	D	D		C	B	B	E	D	D
Approach Vol, veh/h	786			436			913			1503		
Approach Delay, s/veh	38.4			44.7			21.8			45.2		
Approach LOS	D			D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc),s	47.9	8.4	25.7	29.9	36.0	15.0	19.1					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
Max Green Setting (Gmax),s	29.0	5.0	33.0	11.0	31.0	10.0	29.0					
Max Q Clear Time (g_c+H),s	10.4	3.9	9.9	7.3	22.5	10.1	12.0					
Green Ext Time (p_c), s	0.0	4.5	0.0	2.7	0.3	4.6	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay	37.8											
HCM 2010 LOS	D											
Notes												

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
4: Auto Park Way & Country Club Dr

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	0	19	0	0	0	83	533	1	64	902	178
Future Volume (veh/h)	251	0	19	0	0	0	83	533	1	64	902	178
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	273	0	21	0	0	0	90	579	1	70	980	193
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	349	297	105	349	0	116	2125	4	90	1685	331
Arrive On Green	0.19	0.00	0.19	0.00	0.00	0.00	0.07	0.59	0.59	0.05	0.57	0.57
Sat Flow, veh/h	1774	1863	1583	1385	1863	0	1774	3625	6	1774	2950	580
Grp Volume(v), veh/h	273	0	21	0	0	0	90	283	297	70	587	586
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1385	1863	0	1774	1770	1862	1774	1770	1760
Q Serve(g_s), s	10.1	0.0	0.7	0.0	0.0	0.0	3.4	5.4	5.4	2.7	14.5	14.6
Cycle Q Clear(g_c), s	10.1	0.0	0.7	0.0	0.0	0.0	3.4	5.4	5.4	2.7	14.5	14.6
Prop In Lane	1.00		1.00		1.00		1.00	1.00	0.00	1.00	0.33	0.33
Lane Grp Cap(c), veh/h	438	349	297	105	349	0	116	1037	1091	90	1011	1006
V/C Ratio(X)	0.62	0.00	0.07	0.00	0.00	0.00	0.07	0.27	0.27	0.78	0.58	0.58
Avail Cap(c_a), veh/h	859	791	673	434	791	0	260	1037	1091	234	1011	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	22.8	0.0	0.0	0.0	31.4	7.0	7.0	32.0	9.4	9.4
Incr Delay (d2), s/veh	1.5	0.0	0.1	0.0	0.0	0.0	10.3	0.6	0.6	13.4	2.4	2.5
Initial Q Delay(Qs), 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 BackQ(50%), veh/ln	1.1	0.0	0.3	0.0	0.0	0.0	2.0	2.8	2.9	1.6	7.7	7.7
LnGrp Delay(d), s/veh	28.1	0.0	22.9	0.0	0.0	0.0	41.7	7.6	7.6	45.5	11.8	11.9
LnGrp LOS	C		C				D	A	A	D	B	B
Approach Vol, veh/h	294			0			670			1243		
Approach Delay, s/veh	27.7			0.0			12.2			13.7		
Approach LOS	C						B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	44.0			16.8	8.5	43.0		16.8				
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	40.0			29.0	10.0	39.0		29.0				
Max Q Clear Time (g_c+H), s	7.4			12.1	5.4	16.6		0.0				
Green Ext Time (p_c), s	0.0	3.8		0.8	0.1	8.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	15.1											
HCM 2010 LOS	B											

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
5: Harmony Grove Rd & Enterprise St

Existing + Proj AM
02/09/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	129	113	160	340	139	180
Future Volume (veh/h)	129	113	160	340	139	180
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	140	123	174	370	151	196
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	255	216	257	713	737	887
Arrive On Green	0.14	0.14	0.14	0.38	0.42	0.42
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583
Grp Volume(v), veh/h	140	123	174	370	151	196
Grp Sat Flow(s), veh/h/ln	1863	1583	1774	1863	1774	1583
Q Serve(g_s), s	3.1	3.2	4.1	6.8	2.4	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	336	758	0	0	778	177	317	3	341	0	0	0
Future Volume (veh/h)	336	758	0	0	778	177	317	3	341	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	365	824	0	0	845	192	345	3	371			
Adj No. of Lanes	2	3	0	0	3	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	447	2640	0	0	1776	551	677	6	606			
Arrive On Green	0.13	0.52	0.00	0.00	0.35	0.35	0.38	0.38	0.38			
Sat Flow, veh/h	3442	5253	0	0	5253	1579	1759	15	1576			
Grp Volume(v), veh/h	365	824	0	0	846	192	348	0	371			
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1579	1775	0	1576			
Q Serve(g_s), s	10.8	9.8	0.0	0.0	13.6	9.5	15.8	0.0	19.9			
Cycle Q Clear(g_c), s	10.8	9.8	0.0	0.0	13.6	9.5	15.8	0.0	19.9			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	447	2640	0	0	1776	551	683	0	606			
V/C Ratio(X)	0.82	0.31	0.00	0.00	0.48	0.35	0.51	0.00	0.61			
Avail Cap(c_a), veh/h	682	2640	0	0	1776	551	683	0	606			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(f)	0.95	0.95	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	44.5	14.5	0.0	0.0	26.7	25.3	24.7	0.0	26.0			
Incr Delay (d2), s/veh	4.4	0.3	0.0	0.0	1.7	1.7	2.7	0.0	4.6			
Initial Q Delay(Qs), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	5.4	4.6	0.0	0.0	6.5	4.4	8.2	0.0	9.4			
LnGrp Delay(d), s/veh	48.8	14.8	0.0	0.0	27.6	27.0	27.4	0.0	30.6			
LnGrp LOS	D	B			C	C	C		C			
Approach Vol, veh/h	1189				1038			719				
Approach Delay, s/veh	25.2				27.5			29.0				
Approach LOS	C				C			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2				5	6		8				
Phs Duration (G+Y+Rc), s	60.0				17.8	42.2		45.0				
Change Period (Y+Rc), s	5.5				* 4.2	5.5						
Max Green Setting (Gmax), s	54.5				* 21	29.5		40.4				
Max Q Clear Time (g_c+1), s	11.8				12.8	15.6		21.9				
Green Ext Time (p_c), s	6.1				0.8	5.1		3.4				
Intersection Summary												
HCM 2010 Ctrl Delay					27.0							
HCM 2010 LOS					C							
Notes												

HCM 2010 Signalized Intersection Summary
N:\2314\Analysis\Intersections\HCM 2010\Existing+Project AM_I-15 Valley Pkwy synSynchro 7 - Report
Page 1HCM 2010 Signalized Intersection Summary
9: W Valley Pkwy & Auto Park WayExisting + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	368	320	75	584	31	229	708	39	98	857	560
Future Volume (veh/h)	179	368	320	75	584	31	229	708	39	98	857	560
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	195	400	348	82	635	34	249	770	42	107	932	609
Adj No. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	531	458	146	857	46	337	1880	585	175	1576	627
Arrive On Green	0.09	0.29	0.29	0.04	0.25	0.25	0.10	0.37	0.37	0.05	0.31	0.31
Sat Flow, veh/h	3442	1802	1556	3442	3417	183	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	195	393	355	82	329	340	249	770	42	107	932	609
Grp Sat Flow(s), veh/h/ln	1721	1770	1588	1721	1770	1830	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	4.3	15.8	15.9	1.8	13.4	13.4	5.5	8.8	1.3	2.4	12.1	24.3
Cycle Q Clear(g_c), s	4.3	15.8	15.9	1.8	13.4	13.4	5.5	8.8	1.3	2.4	12.1	24.3
Prop In Lane	1.00		0.98	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	297	521	468	146	444	459	337	1880	585	175	1576	627
V/C Ratio(X)	0.66	0.75	0.76	0.56	0.74	0.74	0.74	0.41	0.07	0.61	0.59	0.97
Avail Cap(c_a), veh/h	1053	925	830	219	496	513	439	1880	585	263	1576	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	25.1	25.1	36.8	27.0	27.1	34.4	18.4	16.0	36.5	22.9	23.2
Incr Delay (d2), s/veh	2.5	2.2	2.6	3.3	5.2	5.1	4.5	0.7	0.2	3.4	1.6	29.4
Initial Q Delay(Qs), 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	2.1	8.0	7.3	0.9	7.1	7.5	2.8	0.4	0.6	1.2	5.9	17.9
LnGrp Delay(d), s/veh	37.2	27.3	27.7	40.2	32.3	32.2	39.0	19.0	16.2	39.9	24.5	52.6
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	C	D
Approach Vol, veh/h	943				751			1061			1648	
Approach Delay, s/veh	29.5				33.1			23.6			35.9	
Approach LOS	C				C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	34.0	8.3	28.1	12.7	29.3	11.8	24.7				
Change Period (Y+Rc), s	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	6.0	29.0	6.0	41.0	10.0	24.0	24.0	22.0				
Max Q Clear Time (g_c+1), s	4.4	10.8	3.8	17.9	7.5	26.3	6.3	15.4				
Green Ext Time (p_c), s	0.0	5.3	0.0	5.2	0.2	0.0	0.6	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay					31.1							
HCM 2010 LOS					C							
Notes												

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	791	78	103	834	158	37	42	90	213	101	464
Future Volume (veh/h)	101	791	78	103	834	158	37	42	90	213	101	464
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	110	860	85	112	907	172	40	46	98	232	110	504
Adj No. of Lanes	2	3	1	2	4	1	1	1	1	1	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	1758	547	278	2810	595	132	139	242	434	206	562
Arrive On Green	0.05	0.35	0.35	0.08	0.38	0.38	0.07	0.07	0.07	0.36	0.36	0.36
Sat Flow, veh/h	3442	5085	1581	3548	7451	1577	1774	1863	1583	1222	579	1583
Grp Volume(v), veh/h	110	860	85	112	907	172	40	46	98	342	0	504
Grp Sat Flow(s), veh/h/ln	1721	1695	1581	1774	1863	1577	1774	1863	1583	1802	0	1583
Q Serve(g_s), s	3.9	16.6	4.6	3.8	10.8	9.5	2.7	2.9	7.0	18.9	0.0	37.6
Cycle Q Clear(g_c), s	3.9	16.6	4.6	3.8	10.8	9.5	2.7	2.9	7.0	18.9	0.0	37.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.88		1.00
Van Grp Cap(c), veh/h	162	1758	547	278	2810	595	132	139	242	640	0	562
Lane Ratio(Q)	0.68	0.49	0.16	0.40	0.32	0.29	0.30	0.33	0.41	0.53	0.00	0.90
avial Cap(c_a), veh/h	242	1758	547	335	2810	595	227	238	327	755	0	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	32.2	28.3	54.8	27.6	27.2	54.8	54.9	47.8	32.1	0.0	38.1
Incr Delay (d2), s/veh	5.0	1.0	0.6	0.8	0.1	0.2	1.3	1.4	1.1	0.7	0.0	13.4
Initial Q Delay(Q),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
% Late BackOf(Q50%),veh/ln	2.0	8.0	2.1	1.9	5.6	4.2	1.4	1.6	3.1	9.5	0.0	18.5
LnGrp Delay(d),s/veh	63.6	33.2	28.9	55.6	27.7	27.4	56.1	56.3	48.9	32.8	0.0	51.6
LnGrp LOS	E	C	C	E	C	C	E	E	D	C	D	D
Approach Vol, veh/h		1055			1191			184			846	
Approach Delay, s/veh		36.0			30.3			52.3			44.0	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	48.7		49.0	10.1	52.6		13.3				
Change Period (Y+Rc), s	* 4.2	5.5		4.6	* 4.2	5.5		4.0				
Max Green Setting (Gmax), s	* 12	26.5		52.4	* 8.8	29.5		16.0				
Max Q Clear Time (g_c+1), s	5.8	18.6		39.6	5.9	12.8		9.0				
Green Ext Time (p_c), s	0.1	3.4		4.7	0.1	5.9		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay	36.9											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary
11: W Valley Pkwy & W. 11th Ave/W 11th Ave

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	19	24	14	42	49	20	695	6	25	1012	47
Future Volume (veh/h)	63	19	24	14	42	49	20	695	6	25	1012	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	68	21	26	15	46	53	22	755	7	27	1100	51
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	50	61	146	65	75	37	1752	16	44	1739	778
Arrive On Green	0.07	0.07	0.07	0.08	0.08	0.08	0.02	0.49	0.49	0.02	0.49	0.49
Sat Flow, veh/h	1774	758	939	1774	791	911	1774	3593	33	1774	3539	1583
Grp Volume(v), veh/h	68	0	47	15	0	99	22	372	390	27	1100	51
Grp Sat Flow(s), veh/h/ln	1774	0	1697	1774	0	1702	1774	1770	1857	1774	1770	1583
Q Serve(g_s), s	2.0	0.0	1.4	0.4	0.0	3.0	0.7	7.2	7.2	0.8	12.1	0.9
Cycle Q Clear(g_c), s	2.0	0.0	1.4	0.4	0.0	3.0	0.7	7.2	7.2	0.8	12.1	0.9
Prop In Lane	1.00		0.55	1.00		0.54	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	116	0	111	146	0	140	37	863	905	44	1739	778
V/C Ratio(X)	0.59	0.00	0.42	0.10	0.00	0.71	0.59	0.43	0.43	0.61	0.63	0.07
Avail Cap(c_a), veh/h	536	0	513	536	0	515	134	863	905	184	1739	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	23.8	22.5	0.0	23.7	25.7	8.8	8.8	25.5	9.9	7.1
Incr Delay (d2), s/veh	4.6	0.0	2.5	0.3	0.0	6.4	14.2	1.6	1.5	13.1	1.8	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	1.1	0.0	0.7	0.2	0.0	1.7	0.5	3.9	4.1	0.6	6.2	0.4
LnGrp Delay(d), s/veh	28.7	0.0	26.3	22.8	0.0	30.1	39.9	10.4	10.3	38.7	11.7	7.2
LnGrp LOS	C		C	C		C	D	B	B	D	B	A
Approach Vol, veh/h	115				114			784			1178	
Approach Delay, s/veh	27.7				29.1			12.1			12.1	
Approach LOS	C				C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.3			8.0	5.6	30.5		8.8				
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	24.5			16.0	4.0	26.0		16.0				
Max Q Clear Time (g_c+1), s	9.2			4.0	2.7	14.1		5.0				
Green Ext Time (p_c), s	0.0	4.3		0.3	0.0	6.2		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay	13.5											
HCM 2010 LOS	B											

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HCM 2010 Signalized Intersection Summary
12: W Valley Pkwy & W Citracado Pkwy

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	9	388	80	11	46	308	283	38	123	926	49
Future Volume (veh/h)	132	9	388	80	11	46	308	283	38	123	926	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	143	10	205	87	12	50	335	308	41	134	1007	53
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	287	244	112	217	185	380	1498	198	169	1222	64
Arrive On Green	0.10	0.15	0.15	0.06	0.12	0.12	0.21	0.48	0.48	0.10	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3144	415	1774	3421	180
Grp Volume(v), veh/h	143	10	205	87	12	50	335	172	177	134	521	539
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1790	1774	1770	1831
Q Serve(g_s), s	6.7	0.4	10.7	4.1	0.5	2.5	15.6	4.8	4.9	6.3	22.8	2.8
Cycle Q Clear(g_c), s	6.7	0.4	10.7	4.1	0.5	2.5	15.6	4.8	4.9	6.3	22.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.10
Lane Grp Cap(c), veh/h	178	287	244	112	217	185	380	843	852	169	632	654
V/C Ratio(X)	0.80	0.03	0.84	0.78	0.06	0.27	0.88	0.20	0.21	0.79	0.82	0.82
Avail Cap(c_a), veh/h	260	435	370	181	352	299	544	987	998	331	775	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	30.8	35.0	39.3	33.4	34.3	32.4	12.9	13.0	37.7	24.9	24.9
Incr Delay (d2), s/veh	10.9	0.0	10.3	11.0	0.1	0.8	11.5	0.1	0.1	8.1	6.0	5.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.8	0.2	5.4	2.3	0.3	1.1	8.8	2.4	2.4	3.5	12.2	12.6
LnGrp Delay(d), s/veh	48.4	30.7	45.3	50.3	33.5	35.1	43.9	13.1	13.1	45.8	30.9	30.8
LnGrp LOS	D	C	D	D	C	D	D	B	B	D	C	C
Approach Vol, veh/h	358				149			684			1194	
Approach Delay, s/veh	46.1				43.8			28.2			32.5	
Approach LOS	D				D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	45.1	9.9	17.6	22.8	34.9	13.0	14.4					
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Green Setting (Gmax), s	47.5	8.7	19.9	26.1	37.3	12.5	16.1					
Max Q Clear Time (g_c+1), s	6.9	6.1	12.7	17.6	24.8	8.7	4.5					
Green Ext Time (p_c), s	0.2	2.2	0.0	0.4	0.7	5.6	0.1	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	34.0											
HCM 2010 LOS	C											

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
13: I-15 SB Ramps & Auto Park Way

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	557	641	121	1163	0	0	0	0	155	7	73
Future Volume (veh/h)	0	557	641	121	1163	0	0	0	0	155	7	73
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	714	682	175	1352	0				208	0	96
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	2081	914	214	2675	0				318	0	142
Arrive On Green	0.00	0.62	0.62	0.13	0.79	0.00				0.09	0.00	0.09
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	714	682	175	1352	0				208	0	96
Grp Sat Flow(s), veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	8.7	27.8	8.6	11.8	0.0				5.0	0.0	5.2
Cycle Q Clear(g_c), s	0.0	8.7	27.8	8.6	11.8	0.0				5.0	0.0	5.2
Prop In Lane	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2081	914	214	2675	0				318	0	142
V/C Ratio(X)	0.00	0.34	0.75	0.82	0.51	0.00				0.65	0.00	0.68
Avail Cap(c_a), veh/h	0	2081	914	314	2675	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.76	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.9	11.6	36.2	3.0	0.0				37.2	0.0	37.2
Incr Delay (d2), s/veh	0.0	0.5	5.5	7.9	0.5	0.0				2.3	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0

HCM 2010 AWSC
15: Kauana Loa Dr & Country Club Dr

Existing + Proj AM
02/09/2018

Intersection						
Intersection Delay, s/veh 8.7						
Intersection LOS A						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	8	77	173	15	72	123
Future Vol, veh/h	8	77	173	15	72	123
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	84	188	16	78	134
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB	SB			
Opposing Approach		SB	NB			
Opposing Lanes	0	1	1			
Conflicting Approach Left NB			WB			
Conflicting Lanes Left	1	0	1			
Conflicting Approach Right SB		WB				
Conflicting Lanes Right	1	1	0			
HCM Control Delay	7.9	8.7	9			
HCM LOS	A	A	A			

Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	9%	37%			
Vol Thru, %	92%	0%	63%			
Vol Right, %	8%	91%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	188	85	195			
LT Vol	0	8	72			
Through Vol	173	0	123			
RT Vol	15	77	0			
Lane Flow Rate	204	92	212			
Geometry Grp	1	1	1			
Degree of Util (X)	0.245	0.111	0.262			
Departure Headway (Hd)	4.317	4.329	4.443			
Convergence, Y/N	Yes	Yes	Yes			
Cap	834	829	814			
Service Time	2.335	2.352	2.443			
HCM Lane V/C Ratio	0.245	0.111	0.26			
HCM Control Delay	8.7	7.9	9			
HCM Lane LOS	A	A	A			
HCM 95th-ile Q	1	0.4	1.1			

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 Signalized Intersection Summary
17: Country Club Dr & Harmony Grove Rd

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	202	12	84	383	2	26	66	197	2	31	127
Future Volume (veh/h)	48	202	12	84	383	2	26	66	197	2	31	127
Number	5	2	12	1	6	16	3	8	18	7	4	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	
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	52	220	13	91	416	2	28	72	214	2	34	138
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	522	31	89	583	852	33	85	254	399	73	295
Arrive On Green	0.04	0.30	0.30	0.05	0.31	0.31	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1742	103	1774	1863	1583	148	380	1129	1774	323	1309
Grp Volume(v), veh/h	52	0	233	91	416	2	314	0	0	2	0	172
Grp Sat Flow(s), veh/h/ln	1774	0	1845	1774	1863	1583	1656	0	0	1774	0	1632
Q Serve(g_s), s	2.3	0.0	8.1	4.0	15.8	0.0	14.5	0.0	0.0	0.1	0.0	7.3
Cycle Q Clear(g_c), s	2.3	0.0	8.1	4.0	15.8	0.0	14.5	0.0	0.0	0.1	0.0	7.3
Prop In Lane	1.00		0.06	1.00		1.00	0.09		0.68	1.00		0.80
Lane Grp Cap(c), veh/h	66	0	553	89	583	852	373	0	0	399	0	367
V/C Ratio(X)	0.79	0.00	0.42	1.03	0.71	0.00	0.84	0.00	0.00	0.01	0.00	0.47
Avail Cap(c_a), veh/h	89	0	553	89	583	852	373	0	0	399	0	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	22.4	38.0	24.3	8.6	29.6	0.0	0.0	24.1	0.0	26.9
Incr Delay (d2), s/veh	28.1	0.0	2.3	102.8	7.3	0.0	20.1	0.0	0.0	0.0	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	4.4	4.5	9.3	0.0	8.7	0.0	0.0	0.0	0.0	3.7
LnGrp Delay(d),s/veh	66.3	0.0	24.8	141.1	31.6	8.6	49.8	0.0	0.0	24.1	0.0	31.1
LnGrp LOS	E		C	F	C	A	D			C		C
Approach Vol, veh/h	285			509			314			174		
Approach Delay, s/veh	32.3			51.1			49.8			31.0		
Approach LOS	C			D			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0	28.0		22.0	7.0	29.0		22.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	24.0			18.0	4.0	24.0		18.0				
Max Q Clear Time (g_c+1.0), s	10.1			9.3	4.3	17.8		16.5				
Green Ext Time (p_c), s	0.0	1.1		0.6	0.0	1.3		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay	43.9											
HCM 2010 LOS	D											

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 AWSC
16: Harmony Grove Village Pkwy & Country Club Dr

Existing + Proj AM
02/09/2018

Intersection						
Intersection Delay, s/veh 10.4						
Intersection LOS B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	168	214	144	16	6	176
Future Vol, veh/h	168	214	144	16	6	176
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	183	233	157	17	7	191
Number of Lanes	1	1	1	1	1	1
Approach	EB	WB	SB			
Opposing Approach	WB	EB				
Opposing Lanes	2	2				
Conflicting Approach Left SB			WB			
Conflicting Lanes Left	2	0	2			
Conflicting Approach Right		SB	EB			
Conflicting Lanes Right	0	2	2			
HCM Control Delay	10.8	9.8	10.1			
HCM LOS	B	A	B			

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	168	214	144	16	6	176
LT Vol	168	0	0	0	6	0
Through Vol	0	214	144	0	0	0
RT Vol	0	0	0	16	0	176
Lane Flow Rate	183	233	157	17	7	191
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.291	0.338	0.239	0.023	0.012	0.279
Departure Headway (Hd)	5.732	5.228	5.504	4.798	6.457	5.248
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	623	684	646	738	552	679
Service Time	3.503	2.999	3.288	2.581	4.226	3.016
HCM Lane V/C Ratio	0.294	0.341	0.243	0.023	0.013	0.281
HCM Control Delay	10.9	10.7	10	7.7	9.3	10.1
HCM Lane LOS	B	B	A	A	A	B
HCM 95th-ile Q	1.2	1.5	0.9	0.1	0	1.1

Harmony Grove Parcel 06/19/2014 Existing + Proj AM
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HCM 2010 TWSC
18: Harmony Grove Rd & Kauana Loa Dr

Existing + Proj AM
02/09/2018

Intersection							
Int Delay, s/veh		9.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↰			↰	↰		
Traffic Vol, veh/h	68	15	435	38	22	299	
Future Vol, veh/h	68	15	435	38	22	299	
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	74	16	473	41	24	325	
Major/Minor	Major1	Major2	Minor1				
Conflicting Flow All	0	0	90	0	1069	82	
Stage 1	-	-	-	-	82	-	
Stage 2	-	-	-	-	987	-	
Critical Hdwy	-	-	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	-	-	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	1505	-	245	978	
Stage 1	-	-	-	-	941	-	
Stage 2	-	-	-	-	361	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	1505	-	166	978	
Mov Cap-2 Maneuver	-	-	-	-	166	-	
Stage 1	-	-	-	-	639	-	
Stage 2	-	-	-	-	361	-	
Approach	EB		WB		NB		
HCM Control Delay, s	0		7.8		14.3		
HCM LOS					B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	732	-	-	1505	-		
HCM Lane V/C Ratio	0.477	-	-	0.314	-		
HCM Control Delay (s)	14.3	-	-	8.5	0		
HCM Lane LOS	B	-	-	A	A		
HCM 95th %tile Q(veh)	2.6	-	-	1.4	-		

HCM 2010 Signalized Intersection Summary
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Existing + Proj AM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	111	1	319	70	40	2	230	234	10	366	73
Future Volume (veh/h)	93	111	1	319	70	40	2	230	234	10	366	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	101	121	1	347	76	43	2	250	254	11	398	79
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	180	1	404	281	159	4	747	635	20	764	649
Arrive On Green	0.07	0.10	0.10	0.23	0.25	0.25	0.00	0.40	0.40	0.01	0.41	0.41
Sat Flow, veh/h	1774	1845	15	1774	1118	633	1774	1863	1583	1774	1863	1583
Grp Volume(V), veh/h	101	0	122	347	0	119	2	250	254	11	398	79
Grp Sat Flow(s), veh/h/ln	1774	0	1860	1774	0	1751	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.8	0.0	4.3	12.9	0.0	3.7	0.1	6.4	7.8	0.4	11.0	2.1
Cycle Q Clear(g_c), s	3.8	0.0	4.3	12.9	0.0	3.7	0.1	6.4	7.8	0.4	11.0	2.1
Prop In Lane	1.00		0.01	1.00		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	0	181	404		440	4	747	635	20	764	649
V/C Ratio(X)	0.77	0.00	0.67	0.86	0.00	0.27	0.52	0.33	0.40	0.56	0.52	0.12
Avail Cap(c_a), veh/h	303	0	434	634		736	103	747	635	103	764	649
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	0.0	29.9	25.4	0.0	20.6	34.2	14.2	14.6	33.7	15.2	12.6
Incr Delay (d2), s/veh	4.2	0.0	4.3	7.1	0.0	0.3	78.9	1.2	1.9	22.9	2.5	0.4
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	2.2	0.0	2.5	7.1	0.0	1.9	0.1	3.5	3.7	0.3	6.2	1.0
LnGrp Delay(d), s/veh	40.3	0.0	34.2	32.5	0.0	20.9	113.1	15.4	16.5	56.6	17.7	12.9
LnGrp LOS	D		C	C		C	F	B	B	E	B	B
Approach Vol, veh/h	223			466			506			488		
Approach Delay, s/veh	37.0			29.5			16.4			17.8		
Approach LOS	D			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.3	32.0	20.1	11.2	4.6	32.6	9.6	21.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.0	27.5	24.5	16.0	4.0	27.5	11.7	28.8				
Max Q Clear Time (g_c+I1), s	2.4	9.8	14.9	6.3	2.1	13.0	5.8	5.7				
Green Ext Time (p_c), s	0.0	2.2	0.8	0.4	0.0	2.3	0.1	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay	23.2											
HCM 2010 LOS	C											

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HCM 2010 Signalized Intersection Summary
1: SR 78 WB Ramps & Nordahl Rd

Existing + Proj PM
02/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	485	5	248	522	890	0	0	740	348
Future Volume (veh/h)	0	0	0	485	5	248	522	890	0	0	740	348
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863
Adj Flow Rate, veh/h				613	0	182	567	967	0	0	804	378
Adj No. of Lanes				2	0	1	2	2	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	2	2	2
Cap, veh/h				753	0	336	635	2391	0	0	2233	695
Arrive On Green				0.21	0.00	0.21	0.37	1.00	0.00	0.00	0.44	0.44
Sat Flow, veh/h				3548	0	1583	3442	3632	0	0	5253	1583
Grp Volume(V), veh/h				613	0	182	567	967	0	0	804	378
Grp Sat Flow(s), veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583
Q Serve(g_s), s				16.5	0.0	10.2	15.5	0.0	0.0	0.0	10.5	17.6
Cycle Q Clear(g_c), s				16.5	0.0	10.2	15.5	0.0	0.0	0.0	10.5	17.6
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				753	0	336	635	2391	0	0	2233	695
V/C Ratio(X)				0.81	0.00	0.54	0.89	0.40	0.00	0.00	0.36	0.54
Avail Cap(c_a), veh/h				1242	0	554	750	2391	0	0	2233	695
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.48	0.48	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				37.5	0.0	35.1	30.6	0.0	0.0	0.0	18.7	20.7
Incr Delay (d2), s/veh				2.2	0.0	1.4	6.2	0.2	0.0	0.0	0.5	3.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln				8.3	0.0	4.6	7.8	0.1	0.0	0.0	5.0	8.3
LnGrp Delay(d),s/veh				39.7	0.0	36.4	36.9	0.2	0.0	0.0	19.1	23.7
LnGrp LOS				D		D	D	A			B	C
Approach Vol, veh/h				795			1534			1182		
Approach Delay, s/veh				38.9			13.8			20.6		
Approach LOS				D			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		73.2			23.6	49.5		26.8				
Change Period (Y+Rc), s		5.6			5.2	5.6		5.6				
Max Green Setting (Gmax), s		53.8			22	26.8		35.0				
Max Q Clear Time (g_c+I1), s		2.0			17.5	19.6		18.5				
Green Ext Time (p_c), s		9.0			0.9	3.9		2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				21.8								
HCM 2010 LOS				C								
Notes												

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HCM 2010 Signalized Intersection Summary
2: Nordahl Rd & SR 78 EB Ramps

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	343	56	518	0	0	0	0	1069	525	366	859	0
Future Volume (veh/h)	343	56	518	0	0	0	0	1069	525	366	859	0
Number	7	4	14					5	2	12	1	6
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	269	0	715				0	1162	571	398	934	0
Adj No. of Lanes	1	0	2				0	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	469	0	836				0	1196	942	791	2208	0
Arrive On Green	0.26	0.00	0.26				0.00	0.11	0.11	0.46	1.00	0.00
Sat Flow, veh/h	1774	0	3167				0	3632	2787	3442	3632	0
Grp Volume(v), veh/h	269	0	715				0	1162	571	398	934	0
Grp Sat Flow(s), veh/h/ln	1774	0	1583				0	1770	1393	1721	1770	0
Q Serve(g_s), s	13.2	0.0	21.5				0.0	32.7	19.5	8.1	0.0	0.0
Cycle Q Clear(g_c), s	13.2	0.0	21.5				0.0	32.7	19.5	8.1	0.0	0.0
Prop In Lane	1.00		1.00				0.00	1.00	1.00	1.00	0.00	
Lane Grp Cap(c), veh/h	469	0	836				0	1196	942	791	2208	0
V/C Ratio(X)	0.57	0.00	0.85				0.00	0.97	0.61	0.50	0.42	0.00
Avail Cap(c_a), veh/h	585	0	1045				0	1196	942	791	2208	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33	2.00	2.00	1.00
Upstream Filter(f)	1.00	0.00	1.00				0.00	0.68	0.68	0.57	0.87	0.00
Uniform Delay (d), s/veh	31.9	0.0	35.0				0.0	43.9	38.1	23.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	5.9				0.0	15.6	2.0	0.4	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.6	0.0	10.0				0.0	18.6	7.8	3.8	0.2	0.0
LnGrp Delay(d), s/veh	33.0	0.0	40.8				0.0	59.6	40.1	23.4	0.5	0.0
LnGrp LOS	C		D				E	D	D	C	A	
Approach Vol, veh/h	994						1733			1332		
Approach Delay, s/veh	38.7						53.1			7.4		
Approach LOS	D						D			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	28.6	39.4		32.0		68.0						
Change Period (Y+Rc), s		5.6				5.6						
Max Green Setting (Gma), s	* 34		33.0			55.8						
Max Q Clear Time (g_c+Rc), s		34.7	23.5			2.0						
Green Ext Time (p_c), s	0.8	0.0	3.0			8.6						
Intersection Summary												
HCM 2010 Ctrl Delay			34.6									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary

4: Auto Park Way & Country Club Dr

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	0	38	0	0	1	68	918	1	80	654	290
Future Volume (veh/h)	254	0	38	0	0	1	68	918	1	80	654	290
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	276	0	41	0	0	1	74	998	1	87	711	315
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	419	422	359	100	0	359	95	1973	2	113	1322	585
Arrive On Green	0.23	0.00	0.23	0.00	0.00	0.23	0.05	0.54	0.54	0.06	0.55	0.55
Sat Flow, veh/h	1410	1863	1583	1360	0	1583	1774	3628	4	1774	2388	1058
Grp Volume(v), veh/h	276	0	41	0	0	1	74	487	512	87	527	499
Grp Sat Flow(s), veh/h/ln	1410	1863	1583	1360	0	1583	1774	1770	1862	1774	1770	1676
Q Serve(g_s), s	13.6	0.0	1.5	0.0	0.0	0.0	3.0	12.5	12.5	3.5	13.7	13.7
Cycle Q Clear(g_c), s	13.6	0.0	1.5	0.0	0.0	0.0	3.0	12.5	12.5	3.5	13.7	13.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	419	422	359	100	0	359	95	962	1012	113	979	928
V/C Ratio(X)	0.66	0.00	0.11	0.00	0.00	0.00	0.78	0.51	0.51	0.77	0.54	0.54
Avail Cap(c_a), veh/h	665	747	635	337	0	635	221	962	1012	245	979	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	22.2	0.0	0.0	21.6	33.8	10.4	10.4	33.3	10.3	10.3
Incr Delay (d2), s/veh	1.8	0.0	0.1	0.0	0.0	0.0	12.6	1.9	1.8	10.7	2.1	2.2
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/h	15.5	0.0	0.7	0.0	0.0	0.0	1.8	6.6	6.9	2.0	7.2	6.8
LnGrp Delay(d), s/veh	28.7	0.0	22.3	0.0	0.0	21.6	46.3	12.3	12.2	44.0	12.4	12.5
LnGrp LOS	C		C			C	D	B	B	D	B	B
Approach Vol, veh/h	317				1			1073			1113	
Approach Delay, s/veh	27.8				21.6			14.6			14.9	
Approach LOS	C				C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	43.3			20.4	7.9	44.0		20.4				
Change Period (Y+Rc), s	4.0			4.0		4.0		4.0				
Max Green Setting (Gmax), s	38.0			20.0		40.0		29.0				
Max Q Clear Time (g_c+I1), s	14.5			15.6		15.7		2.0				
Green Ext Time (p_c), s	0.1	7.1		0.8		7.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay						16.4						
HCM 2010 LOS						B						

Harmony Grove Parcel 06/19/2014 Existing + Proj PM
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HCM 2010 Signalized Intersection Summary

5: Harmony Grove Rd & Enterprise St

Existing + Proj PM
02/09/2018

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	287	190	249	160	133	468		
Future Volume (veh/h)	287	190	249	160	133	468		
Number	4	14	3	8	5	12		
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		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	312	207	271	174	145	509		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	427	363	342	949	560	805		
Arrive On Green	0.23	0.23	0.19	0.51	0.32	0.32		
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583		
Grp Volume(v), veh/h	312	207	271	174	145	509		
Grp Sat Flow(s), veh/h/ln	1863	1583	1774	1863	1774	1583		
Q Serve(g_s), s	8.0	6.0	7.5	2.6	3.1	12.0		
Cycle Q Clear(g_c), s	8.0	6.0	7.5	2.6	3.1	12.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	427	363	342	949	560	805		
V/C Ratio(X)	0.73	0.57	0.79	0.18	0.26	0.63		
Avail Cap(c_a), veh/h	696	592	556	1443	560	805		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	18.3	17.6	19.8	6.8	13.1	9.2		
Incr Delay (d2), s/veh	2.4	1.4	4.2	0.1	1.1	3.8		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%), veh/ln	4.4	2.7	4.0	1.3	1.7	6.0		
LnGrp Delay(d), s/veh	20.8	19.0	23.9	6.9	14.2	12.9		
LnGrp LOS	C	B	C	A	B	B		
Approach Vol, veh/h	519			445	654			
Approach Delay, s/veh	20.1			17.3	13.2			
Approach LOS	C			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		20.7	14.4	16.3				30.7
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		16.2	16.1	19.2				39.8
Max Q Clear Time (g_c+I1), s		14.0	9.5	10.0				4.6
Green Ext Time (p_c), s		0.6	0.4	1.8				1.0
Intersection Summary								
HCM 2010 Ctrl Delay	16.5							
HCM 2010 LOS	B							

Harmony Grove Parcel 06/19/2014 Existing + Proj PM
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HCM 2010 TWSC

6: Citracado Pkwy & Avenida del Diablo

Existing + Proj PM
02/09/2018

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	0	0	154	19	279	61	0	412	0
Future Vol, veh/h	0	0	1	0	0	154	19	279	61	0	412	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	167	21	303	66	0	448	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	224	-	-	152	448	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	779	0	0	867	1109	-	0	-	-	-
Stage 1	0	0	-	0	0	-	-	-	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	779	-	-	867	1109	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		10.1		0.4		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBln1	SBT	SBR						
Capacity (veh/h)	1109	-	-	779	867	-	-					
HCM Lane V/C Ratio	0.019	-	-	0.001	0.193	-	-					
HCM Control Delay (s)	8.3	-	-	9.6	10.1	-	-					
HCM Lane LOS	A	-	-	A	B	-	-					
HCM 95th %tile Q(veh)	0.1	-	-	0	0.7	-	-					

Harmony Grove Parcel 06/19/2014 Existing + Proj PM
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HCM 2010 Signalized Intersection Summary

7: I-15 NB Ramps & Valley Pkwy

Existing+Project PM
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	782	899	0	0	1038	275	251	1	298	0	0	0
Future Volume (veh/h)	782	899	0	0	1038	275	251	1	298	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	850	977	0	0	1128	299	273	1	324			
Adj No. of Lanes	2	3	0	0	3	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	905	2853	0	0	1312	406	608	2	538			
Arrive On Green	0.26	0.56	0.00	0.00	0.26	0.26	0.34	0.34	0.34			
Sat Flow, veh/h	3442	5253	0	0	5253	1574	1768	6	1569			
Grp Volume(v), veh/h	850	977	0	0	1128	299	274	0	324			
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1574	1774	0	1569			
Served(s), s	25.4	11.0	0.0	0.0	22.2	18.3	12.6	0.0	17.9			
Cycle Q Clear(q_c), s	25.4	11.0	0.0	0.0	22.2	18.3	12.6	0.0	17.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	905	2853	0	0	1312	406	608	0	538			
V/C Ratio(x)	0.94	0.34	0.00	0.00	0.86	0.74	0.45	0.00	0.60			
Avail Cap(c_a), veh/h	914	2853	0	0	1312	406	608	0	538			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(f)	0.77	0.77	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.9	12.5	0.0	0.0	37.1	35.7	26.8	0.0	28.6			
Incr Delay (d2), s/veh	14.0	0.3	0.0	0.0	7.5	11.3	2.4	0.0	4.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.8	5.1	0.0	0.0	11.3	9.2	6.6	0.0	8.5			
Unl Delay(d4),s/veh	51.9	12.8	0.0	0.0	44.6	47.0	29.2	0.0	33.5			
LnGrp LOS	D	B			D	D	C		C			
Approach Vol, veh/h	1827				1427			598				
Approach Delay, s/veh	31.0				45.1			31.5				
Approach LOS	C				D			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2				2							
Phs Duration (G+Y+Rc), s	64.4				31.8	32.6			4.6			
Change Period (Y+Rc), s	5.5				4.2	5.5			4.8			
Max Green Setting (Gmax), s	58.9				*28	26.8			36.0			
Max Q Clear Time (q_c+I), s	13.0				27.4	24.2			19.9			
Green Ext Time (p_c), s	7.6				0.2	1.8			2.6			

HCM 2010 Signalized Intersection Summary
8: Shopping Ctr Dwy/I-15 SB Ramps & Valley Pkwy

Existing+Project PM
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	1213	78	160	799	330	43	36	243	225	123	333
Future Volume (veh/h)	96	1213	78	160	799	330	43	36	243	225	123	333
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	104	1318	85	174	1038	245	47	39	264	245	134	362
Adj No. of Lanes	2	3	1	2	4	1	1	1	1	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	2049	634	272	3243	689	218	229	194	299	164	405
Arrive On Green	0.04	0.40	0.40	0.08	0.44	0.44	0.12	0.12	0.12	0.26	0.26	0.26
Sat Flow, veh/h	3442	5085	1574	3548	7451	1583	1774	1863	1579	1166	638	1580
Grp Volume(v), veh/h	104	1318	85	174	1038	245	47	39	264	245	0	362
Grp Sat Flow(s),veh/h/ln	1721	1695	1574	1774	1863	1583	1774	1863	1579	1804	0	1580
Q Serve(g, s), s	3.9	27.2	4.4	6.2	11.9	13.4	3.1	2.4	16.0	25.7	0.0	28.7
Cycle Q Clear(g_c), s	3.9	27.2	4.4	6.2	11.9	13.4	3.1	2.4	16.0	25.7	0.0	28.7
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.65	1.00	1.00
Lane Grp Cap(c), veh/h	153	2049	634	272	3243	689	218	229	194	463	0	405
V/C Ratio(X)	0.68	0.64	0.13	0.64	0.32	0.36	0.22	0.17	1.36	0.82	0.00	0.89
Avail Cap(c_a), veh/h	228	2049	634	330	3243	689	218	229	194	512	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.40	0.40	0.40	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.2	31.3	24.5	58.3	24.1	24.5	51.3	51.1	57.0	45.5	0.0	46.6
Incr Delay (d2), s/veh	5.2	1.6	0.4	1.2	0.0	0.1	0.5	0.3	190.8	9.4	0.0	18.7
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	2.0	13.0	2.0	3.1	6.1	5.9	1.6	1.3	17.3	14.0	0.0	14.7
LnGrp Delay(d),s/veh	66.4	32.8	24.9	59.4	24.1	24.7	51.8	51.4	247.8	54.9	0.0	65.4
LnGrp LOS	E	C	C	E	C	C	D	D	F	D		E
Approach Vol, veh/h	1507			1457			350			741		
Approach Delay, s/veh	34.7			28.4			199.6			60.0		
Approach LOS	C			C			F			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	57.9		37.9	10.0	62.1		20.0				
Change Period (Y+Rc), s	4.2	5.5		4.6	4.2	5.5		4.0				
Max Green Setting (Gmax), s	12	46.7		36.9	6.6	50.2		16.0				
Max Q Clear Time (g_c+I1), s	8.2	29.2		30.7	5.5	15.4		18.0				
Green Ext Time (p_c), s	0.2	8.5		2.5	0.1	9.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	51.3											
HCM 2010 LOS	D											
Notes												

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HCM 2010 Signalized Intersection Summary
9: W Valley Pkwy/W. Valley Pkwy & Auto Park Way

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	416	718	215	117	332	168	246	941	51	189	747	235
Future Volume (veh/h)	416	718	215	117	332	168	246	941	51	189	747	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	452	780	234	127	361	180	267	1023	55	205	812	255
Adj No. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	544	894	268	177	518	258	348	1501	467	221	1313	659
Arrive On Green	0.16	0.33	0.33	0.05	0.23	0.23	0.10	0.30	0.30	0.06	0.26	0.26
Sat Flow, veh/h	3442	2685	805	3442	2289	1142	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	452	514	500	127	278	266	267	1023	55	205	812	255
Grp Sat Flow(s), veh/h/ln	1721	1770	1721	1721	1770	1661	1721	1695	1583	1721	1695	1583
Q Serve(g, s), s	9.9	21.3	21.3	2.8	11.2	11.5	5.9	13.8	2.0	4.6	11.0	8.7
Cycle Q Clear(g_c), s	9.9	21.3	21.3	2.8	11.2	11.5	5.9	13.8	2.0	4.6	11.0	8.7
Prop In Lane	1.00	1.00	0.47	1.00	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	544	589	573	177	409	376	348	1501	467	221	1313	659
V/C Ratio(X)	0.83	0.87	0.87	0.72	0.69	0.71	0.77	0.68	0.12	0.93	0.62	0.39
Avail Cap(c_a), veh/h	618	636	618	177	409	384	353	1501	467	221	1313	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	24.4	24.4	36.4	27.7	27.8	34.1	24.2	20.1	36.3	25.5	15.8
Incr Delay (d2), s/veh	8.5	12.1	12.4	13.2	4.9	5.8	9.6	2.5	0.5	41.2	2.2	1.7
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	5.3	12.4	12.1	1.7	6.0	5.9	3.2	6.8	0.9	3.5	5.4	4.1
LnGrp Delay(d), s/veh	40.3	36.6	36.9	49.6	32.6	33.6	43.8	26.8	20.6	77.5	27.7	17.6
LnGrp LOS	D	D	D	D	C	C	C	D	C	E	C	B
Approach Vol, veh/h	1466			671			1345			1272		
Approach Delay, s/veh	37.8			36.2			29.9			33.7		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	28.0	9.0	30.9	12.9	25.1	17.3	22.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	6	23.0	4.0	28.0	8.0	20.0	14.0	18.0				
Max Q Clear Time (g_c+I1), s	6.6	15.8	4.8	23.3	7.9	13.0	11.9	13.5				
Green Ext Time (p_c), s	0.0	4.0	0.0	2.7	0.0	3.6	0.4	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay	34.2											
HCM 2010 LOS	C											

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HCM 2010 Signalized Intersection Summary
10: W Valley Pkwy & W. 9th Ave

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	457	15	168	219	73	23	956	203	107	785	191
Future Volume (veh/h)	288	457	15	168	219	73	23	956	203	107	785	191
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	313	497	16	183	238	79	25	1039	221	116	853	208
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	714	23	223	353	114	38	1486	316	130	1658	402
Arrive On Green	0.20	0.20	0.20	0.13	0.13	0.13	0.02	0.35	0.35	0.07	0.41	0.41
Sat Flow, veh/h	1774	3500	113	1774	2630	852	1774	4203	893	1774	4087	991
Grip Volume(v), veh/h	313	251	262	183	158	159	25	838	422	116	707	354
Grip Sat Flow(s), veh/h/ln	1774	1770	1843	1774	1770	1712	1774	1695	1705	1774	1695	1688
Q Serve(g_s), s	14.1	10.8	10.8	8.3	7.0	7.3	1.1	17.4	17.4	5.3	12.8	13.0
cycle Q Clear(g_c), s	14.1	10.8	10.8	8.3	7.0	7.3	1.1	17.4	17.4	5.3	12.8	13.0
Prop In Lane	1.00		0.06	1.00		0.50	1.00		0.52	1.00		0.59
Lane Grp Cap(c), veh/h	346	361	376	223	238	230	38	1199	603	130	1375	685
V/C Ratio(x)	0.90	0.70	0.70	0.82	0.67	0.69	0.67	0.70	0.70	0.89	0.51	0.52
Aval Cap(c_a), veh/h	346	647	674	324	626	605	108	1199	603	130	1375	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	30.3	30.3	35.0	33.7	33.9	39.9	22.8	22.8	37.7	18.3	18.3
Incr Delay (d2), s/veh	26.1	2.4	2.3	10.5	3.2	3.7	18.4	3.4	6.6	48.4	1.4	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln/s	5.5	5.7	4.7	3.6	3.7	3.8	0.8	9.3	4.4	6.2	6.5	
LnGrp Delay(d),s/veh	58.3	32.7	32.6	45.4	36.9	37.5	58.2	26.2	29.4	86.1	19.7	21.1
LnGrp LOS	E	C	C	D	D	D	E	C	C	F	B	C
Approach Vol, veh/h		826			500			1285			1177	
Approach Delay, s/veh		42.4			40.2			27.9			26.7	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R), s	31.0	34.0	15.3	21.7	6.7	38.3	21.0	5.0	16.0			
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Max Green Setting (Gmax), s	29.0	29.0	15.0	30.0	5.0	30.0	16.0	29.0				
Max Q Clear Time (q_c+H), s	19.4	10.3	12.8	3.1	5.0	16.1	9.3					
Green Ext Time (p_c), s	0.0	5.6	0.2	2.8	0.0	6.4	0.0	1.8				
Intersection Summary												
HCM 2010 Ctrl Delay	32.3											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
12: W Citracado Pkwy & W Valley Pkwy

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	9	287	20	4	56	354	893	26	64	449	268
Future Volume (veh/h)	106	9	287	20	4	56	354	893	26	64	449	268
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	115	10	230	22	4	61	385	971	28	70	489	291
Adj No. of Lanes			1			1			2		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	317	270	34	200	170	432	1918	55	90	756	449
Arrive On Green	0.08	0.17	0.17	0.02	0.11	0.11	0.24	0.55	0.55	0.05	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3513	101	1774	2138	1270
Grp Volume(v), veh/h	115	10	230	22	4	61	385	489	510	70	404	375
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1770	1639
Q Serve(g_s), s	5.4	0.4	11.9	1.0	0.2	3.0	17.7	14.6	14.6	3.3	16.1	16.2
Cycle Q Clear(g_c), s	5.4	0.4	11.9	1.0	0.2	3.0	17.7	14.6	14.6	3.3	16.1	16.2
Prop In Lane	1.00		1.00			1.00			0.05	1.00		0.78
Lane Grp Cap(c), veh/h	146	317	270	34	200	170	432	966	1007	90	626	579
V/C Ratio(X)	0.79	0.03	0.85	0.65	0.02	0.36	0.89	0.51	0.51	0.77	0.64	0.65
Avail Cap(c_a), veh/h	221	469	398	112	354	301	600	966	1007	200	626	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	29.2	33.9	41.0	33.7	34.9	30.8	12.0	12.0	39.5	22.8	22.8
Incr Delay (d2), s/veh	10.3	0.0	11.2	18.9	0.0	1.3	12.0	1.9	1.8	13.1	5.1	5.5
Initial Q Delay(g3), 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/h	0.0	0.2	6.0	0.7	0.1	1.4	10.1	7.6	7.9	1.9	8.7	8.2
LnGrp Delay(d), s/veh	48.2	29.2	45.1	60.0	33.7	36.2	42.8	13.9	13.8	52.6	27.9	28.4
LnGrp LOS	D	C	D	E	C	D	D	B	B	D	C	C
Approach Vol, veh/h		355			87		1384			849		
Approach Delay, s/veh		45.7			42.1		39.9			30.1		
Approach LOS		D			D		C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	88.8	50.5	6.1	18.8	25.0	34.3	11.4	13.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	46.0	5.3	21.2	28.5	27.0	10.5	16.0					
Max Q Clear Time (g_c+1), s	16.6	3.0	13.9	19.7	18.2	7.4	5.0					
Green Ext Time (p_c), s	0.0	7.6	0.0	0.5	0.8	3.3	0.1	0.1				

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HCM 2010 Signalized Intersection Summary
14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	983	0	0	741	405	586	5	257	0	0	0
Future Volume (veh/h)	170	983	0	0	741	405	586	5	257	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776			1776
Adj Flow Rate, veh/h	205	1068	0	0	882	431	623	0	299			299
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			1
Peak Hour Factor	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86			0.86
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			7
Cap, veh/h	287	2188	0	0	1726	771	807	0	360			360
Arrive On Green	0.17	1.00	0.00	0.00	0.51	0.51	0.24	0.00	0.24			0.24
Sat Flow, veh/h	3281	3463	0	0	3463	1507	3382	0	1509			1509
Grp Volume(v), veh/h	205	1068	0	0	882	431	623	0	299			299
Grp Sat Flow(s), veh/h/ln	1640	1687	0	0	1687	1507	1691	0	1509			1509
Q Serve(g_s), s	5.0	0.0	0.0	0.0	14.7	16.6	14.6	0.0	16.0			16.0
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.0	14.7	16.6	14.6	0.0	16.0			16.0
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	287	2188	0	0	1726	771	807	0	360			360
V/C Ratio(X)	0.71	0.49	0.00	0.00	0.51	0.56	0.77	0.00	0.83			0.83
Avail Cap(c_a), veh/h	610	2188	0	0	1726	771	1011	0	451			451
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00
Upstream Filter(I)	0.79	0.79	0.00	0.00	1.00	1.00	1.00	0.00	1.00			1.00
Uniform Delay (d), s/veh	34.1	0.0	0.0	0.0	13.7	14.2	30.2	0.0	30.7			30.7
Incr Delay (d2), s/veh	2.6	0.6	0.0	0.0	0.3	0.9	2.9	0.0	10.2			10.2
Initial Q Delay(g3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
%ile BackOfQ(50%), veh/h	0.2	0.0	0.0	0.0	6.8	7.0	7.2	0.0	7.7			7.7
LnGrp Delay(d), s/veh	36.7	0.6	0.0	0.0	14.0	15.1	33.1	0.0	40.9			40.9
LnGrp LOS	D	A			B	B	C		D			D
Approach Vol, veh/h		1273			1313		922					
Approach Delay, s/veh		6.4			14.3		35.7					
Approach LOS		A			B		D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6	8					
Phs Duration (G+Y+Rc), s		60.1			11.6	48.5	24.9					
Change Period (Y+Rc), s		5.0			4.2	5.0	4.6					
Max Green Setting (Gmax), s		50.0			16	30.0	25.4					
Max Q Clear Time (g_c+1), s		2.0			7.0	18.6	18.0					
Green Ext Time (p_c), s		10.4			0.4	5.9	2.3					

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HCM 2010 Signalized Intersection Summary
13: I-15 SB Ramps & Auto Park Way

Existing + Proj PM
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↕↕	↕↕	↕↕	↕↕	↕↕	↕↕	↕↕	↕↕	↕↕	↕↕
Traffic Volume (veh/h)	0	820	877	254	1073	0	0	0	0	333	0	103
Future Volume (veh/h)	0	820	877	254	1073	0	0	0	0	333	0	103
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	854	914	306	1206	0				374	0	124
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.96	0.96	0.83	0.89	0.92				0.89	0.92	0.83
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	1665	740	340	2510	0				484	0	216
Arrive On Green	0.00	0.49	0.49	0.20	0.74	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	3463	1499	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	854	914	306	1206	0				374	0	124
Grp Sat Flow(s), veh/h/ln	0	1687	1499	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	14.6	42.0	15.0	12.1	0.0				9.1	0.0	6.5
Cycle Q Clear(g_c), s	0.0	14.6	42.0	15.0	12.1	0.0				9.1	0.0	6.5
Prop In Lane	0.00		1.00	1.00	0.00	1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1665	740	340	2510	0				484	0	216
V/C Ratio(X)	0.00	0.51	1.24	0.90	0.48	0.00				0.77	0.00	0.57
Avail Cap(c_a), veh/h	0	1665	740	340	2510	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.74	0.74	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	14.6	21.5	33.1	4.3	0.0				35.1	0.0	34.0
Incr Delay (d2), s/veh	0.0	1.1	117.6	19.4	0.5	0.0				3.1	0.0	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	7.0	41.4	8.8	5.7	0.0				4.4	0.0	2.9
LnGrp Delay(d), s/veh	0.0	15.7	139.1	52.6	4.8	0.0				38.2	0.0	36.4
LnGrp LOS		B	F	D	A					D		D
Approach Vol, veh/h		1768			1512						498	
Approach Delay, s/veh		79.5			14.5						37.7	
Approach LOS		E			B						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.3	47.0		16.8		68.2						
Change Period (Y+Rc), s	4.2	5.0		4.6		5.0						
Max Green Setting (Gmax), s	18	35.4		18.0		49.4						
Max Q Clear Time (g_c+H), s	6	44.0		11.1		14.1						
Green Ext Time (p_c), s	0.1	0.0		1.1		11.6						
Intersection Summary												
HCM 2010 Ctrl Delay	48.0											
HCM 2010 LOS	D											

Intersection						
Intersection Delay, s/veh12.4						
Intersection LOS B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↶	↶		↶	↶
Traffic Vol, veh/h	201	169	280	9	21	213
Future Vol, veh/h	201	169	280	9	21	213
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	218	184	304	10	23	232
Number of Lanes	1	1	1	1	1	1
Approach	EB	WB	SB			
Opposing Approach	WB	EB				
Opposing Lanes	2	2	0			
Conflicting Approach Left SB			WB			
Conflicting Lanes Left	2	0	2			
Conflicting Approach Right		SB	EB			
Conflicting Lanes Right	0	2	2			
HCM Control Delay	11.8	14	11.5			
HCM LOS	B	B	B			
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	201	169	280	9	21	213
LT Vol	201	0	0	0	21	0
Through Vol	0	169	280	0	0	0
RT Vol	0	0	0	9	0	213
Lane Flow Rate	218	184	304	10	23	232
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.377	0.291	0.494	0.014	0.044	0.367
Departure Headway (Hd)	6.217	5.711	5.841	5.132	6.92	5.706
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	579	630	618	697	518	630
Service Time	3.947	3.441	3.572	2.863	4.656	3.442
HCM Lane V/C Ratio	0.377	0.292	0.492	0.014	0.044	0.368
HCM Control Delay	12.7	10.8	14.2	7.9	10	11.7
HCM Lane LOS	B	B	B	A	A	B
HCM 95th-ile Q	1.7	1.2	2.7	0	0.1	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	498	31	238	221	5	15	38	107	3	86	73
Future Volume (veh/h)	132	498	31	238	221	5	15	38	107	3	86	73
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	143	541	34	259	240	5	16	41	116	3	93	79
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	520	33	89	466	752	35	88	250	399	210	178
Arrive On Green	0.10	0.30	0.30	0.05	0.25	0.25	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1735	109	1774	1863	1583	153	393	1112	1774	932	791
Grp Volume(v), veh/h	143	0	575	259	240	5	173	0	0	3	0	172
Grp Sat Flow(s), veh/h/ln	1774	0	1844	1774	1863	1583	1659	0	0	1774	0	1723
Q Serve(g_s), s	6.3	0.0	24.0	4.0	8.9	0.1	7.2	0.0	0.0	0.1	0.0	6.9
Cycle Q Clear(g_c), s	6.3	0.0	24.0	4.0	8.9	0.1	7.2	0.0	0.0	0.1	0.0	6.9
Prop In Lane	1.00		0.06	1.00		1.00	0.09		0.67	1.00		0.46
Lane Grp Cap(c), veh/h	177	0	553	89	466	752	373	0	0	399	0	388
V/C Ratio(X)	0.81	0.00	1.04	2.92	0.52	0.01	0.46	0.00	0.00	0.01	0.00	0.44
Avail Cap(c_a), veh/h	200	0	553	89	466	752	373	0	0	399	0	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	28.0	38.0	25.8	11.1	26.8	0.0	0.0	24.1	0.0	26.7
Incr Delay (d2), s/veh	19.3	0.0	49.0	89.3	4.0	0.0	4.1	0.0	0.0	0.0	0.0	3.6
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 BackOQ(50%), veh/ln	0.0	0.0	19.7	24.0	5.1	0.1	3.7	0.0	0.0	0.1	0.0	3.6
LnGrp Delay(d), s/veh	54.6	0.0	77.0	931.8	29.8	11.1	30.9	0.0	0.0	24.1	0.0	30.3
LnGrp LOS	D		F	F	C	B	C			C		C
Approach Vol, veh/h	718				504			173			175	
Approach Delay, s/veh	72.5				493.2			30.9			30.2	
Approach LOS	E				F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4	5	5	6	8					
Phs Duration (G+Y+Rc), s	28.0			22.0	12.0	24.0		22.0				
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	24.0			18.0	9.0	19.0		18.0				
Max Q Clear Time (g_c+1), s	26.0			8.9	8.3	10.9		9.2				
Green Ext Time (p_c), s	0.0			0.6	0.0	0.8		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay	198.2											
HCM 2010 LOS	F											

Intersection						
Int Delay, s/veh		12.4				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	TH			TH	TH	
Traffic Vol, veh/h	56	35	340	74	21	551
Future Vol, veh/h	56	35	340	74	21	551
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	61	38	370	80	23	599
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	99	0	900	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1494	-	309	980
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	433	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1494	-	229	980
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	433	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	6.7	18.5			
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	875	-	-	1494	-	
HCM Lane V/C Ratio	0.711	-	-	0.247	-	
HCM Control Delay (s)	18.5	-	-	8.2	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	6.2	-	-	1	-	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	83	4	277	145	20	1	503	397	20	243	123
Future Volume (veh/h)	84	83	4	277	145	20	1	503	397	20	243	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	90	4	301	158	22	1	547	432	22	264	134
Adj No. of Lanes	1	1	0	1	1	1	0	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	143	6	351	340	47	2	839	713	35	874	743
Arrive On Green	0.07	0.08	0.08	0.20	0.21	0.21	0.00	0.45	0.45	0.02	0.47	0.47
Sat Flow, veh/h	1774	1770	79	1774	1601	223	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	91	0	94	301	0	180	1	547	432	22	264	134
Grp Sat Flow(s), veh/h/ln	1774	0	1849	1774	0	1823	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.6	0.0	3.5	11.8	0.0	6.2	6.2	16.4	14.8	0.9	6.3	3.5
Q Clear(g_c), s	3.6	0.0	3.5	11.8	0.0	6.2	6.0	16.4	14.8	0.9	6.3	3.5
Prop In Lane	1.00	1.00	0.04	1.00	1.00	0.12	1.00	1.00	1.00	1.00	1.00	1.00
ane Grp Cap(c), veh/h	118	0	149	351	0	387	2	839	713	35	874	743
Vly Ratio(Q)	0.77	0.00	0.63	0.86	0.00	0.47	0.40	0.65	0.61	0.63	0.30	0.18
Avail Cap(c_a), veh/h	252	0	413	487	0	649	99	839	713	99	874	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), sveh	32.9	0.0	31.9	27.8	0.0	24.7	35.8	15.3	14.9	34.9	11.8	11.0
Incrn Delay (d2), sveh	10.2	0.0	4.3	10.6	0.0	0.9	81.7	3.9	3.8	16.9	0.9	0.5
Initial Q Delay(d3),sveh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Late BackOfQ(50%),veh/ln	2.1	0.0	2.0	6.8	0.0	3.2	0.1	9.3	7.2	0.6	3.4	1.6
LnGrp Delay (d4),sveh	43.2	0.0	36.2	38.4	0.0	25.6	117.5	19.2	18.7	51.8	12.7	11.6
LnGrp LOS	D	D	D	D	D	C	F	B	B	D	B	B
Approach Vol, veh/h		185			481			980			420	
Approach Delay, s/veh		39.6			33.6			19.1			14.4	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	36.8	18.7	10.3	4.6	38.1	9.3	19.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (G_max), s	4.0	32.8	19.7	16.0	4.0	32.3	10.2	25.5				
Max Q Clear Time (g_c+H1), s	2.9	18.4	13.8	8.5	2.0	8.3	5.6	8.2				
Green Ext Time (p_c), s	0.0	4.6	0.5	0.3	0.0	2.0	0.1	0.9				

Existing + Cuml Proj AM
1: SR 78 WB Ramps & Nordahl Rd
Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	508	10	270	604	570	0	0	611	370
Future Volume (veh/h)	0	0	0	508	10	270	604	570	0	0	611	370
Number	3	8	18	5	2	12	1	6	16			
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	
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	0	0	1863	1863			
Adj Flow Rate, veh/h	648	0	199	657	620	0	0	664	402			
Adj No. of Lanes	2	0	1	2	2	0	0	3	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	0	0	2	2			
Cap, veh/h	795	0	355	1184	2350	0	0	1343	418			
Arrive On Green	0.22	0.00	0.22	0.11	0.22	0.00	0.00	0.26	0.26			
Sat Flow, veh/h	3548	0	1583	3442	3632	0	0	5253	1583			
Grp Volume(v), veh/h	648	0	199	657	620	0	0	664	402			
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	1770	0	0	1695	1583			
Q Serve(g, s), s	17.3	0.0	11.2	18.1	14.5	0.0	0.0	11.1	25.0			
Cycle Q Clear(g_c, s)	17.3	0.0	11.2	18.1	14.5	0.0	0.0	11.1	25.0			
Prop In Lane	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00			
Lane Grp Cap(c), veh/h	795	0	355	1184	2350	0	0	1343	418			
V/C Ratio(X)	0.82	0.00	0.56	0.55	0.26	0.00	0.00	0.49	0.96			
Avail Cap(c_a), veh/h	1327	0	592	1184	2350	0	0	1343	418			
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	0.65	0.65	0.00	0.00	1.00	1.00			
Uniform Delay (d), s/veh	36.8	0.0	34.4	37.1	18.8	0.0	0.0	31.2	36.3			
Incr Delay (d2), s/veh	2.1	0.0	1.4	0.4	0.2	0.0	0.0	1.3	35.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.7	0.0	5.0	8.7	7.2	0.0	0.0	5.3	15.1			
LnGrp Delay(d),s/veh	38.9	0.0	35.8	37.5	19.0	0.0	0.0	32.5	71.7			
LnGrp LOS	D			D	B			C	E			
Approach Vol, veh/h				847			1277			1066		
Approach Delay, s/veh				38.2			28.5			47.3		
Approach LOS				D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		72.0			40.0	32.0		28.0				
Change Period (Y+Rc), s		5.6			5.6	*5.6		5.6				
Max Green Setting (Gmax), s		51.4			20.9	*26		37.4				
Max Q Clear Time (g_c+I1), s		16.5			18.1	27.0		19.3				
Green Ext Time (p_c), s		4.8			0.0	0.0		3.1				
Intersection Summary												
HCM 2010 Ctrl Delay				37.3								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj AM
2: Nordahl Rd & SR 78 EB Ramps
Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	140	725	0	0	0	0	909	434	220	899	0
Future Volume (veh/h)	265	140	725	0	0	0	0	909	434	220	899	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	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	
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	243	0	938				0	988	472	239	977	0
Adj No. of Lanes	1	0	2				0	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	604	0	1077				0	1439	1133	307	1939	0
Arrive On Green	0.34	0.00	0.34				0.00	0.41	0.41	0.12	0.73	0.00
Sat Flow, veh/h	1774	0	3167				0	3632	2787	3442	3632	0
Grp Volume(v), veh/h	243	0	938				0	988	472	239	977	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1770	1393	1721	1770	0
Q Serve(g, s), s	10.5	0.0	27.8				0.0	23.0	12.1	6.7	11.8	0.0
Cycle Q Clear(g_c, s)	10.5	0.0	27.8				0.0	23.0	12.1	6.7	11.8	0.0
Prop In Lane	1.00	1.00	1.00				0.00	1.00	1.00	1.00	0.00	
Lane Grp Cap(c), veh/h	604	0	1077				0	1439	1133	307	1939	0
V/C Ratio(X)	0.40	0.00	0.87				0.00	0.69	0.42	0.78	0.50	0.00
Avail Cap(c_a), veh/h	752	0	1343				0	1439	1133	382	1939	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.73	0.73	0.89	0.89	0.00
Uniform Delay (d), s/veh	25.2	0.0	30.9				0.0	24.4	21.2	43.1	7.7	0.0
Incr Delay (d2), s/veh	0.4	0.0	5.4				0.0	2.0	0.8	7.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	12.9				0.0	11.6	4.8	3.5	5.8	0.0
LnGrp Delay(d),s/veh	25.7	0.0	36.3				0.0	26.4	22.0	50.2	8.6	0.0
LnGrp LOS	C		D				C	C	D	A	A	
Approach Vol, veh/h	1181						1460			1216		
Approach Delay, s/veh	34.1						25.0			16.8		
Approach LOS	C						C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	46.3			39.6		60.4						
Change Period (Y+Rc), s	5.2			5.6		*5.6						
Max Green Setting (Gmax), s	30.1			42.4		*47						
Max Q Clear Time (g_c+I1), s	18.8			25.0		29.8				13.8		
Green Ext Time (p_c), s	0.2			3.5		4.3				8.4		
Intersection Summary												
HCM 2010 Ctrl Delay				25.2								
HCM 2010 LOS				C								
Notes												

HCM 2010 Signalized Intersection Summary
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Existing + Cuml Proj AM
3: Auto Park Way/Nordahl Rd & E Mission Rd
Harmony Grove Parcel
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	420	210	104	640	245	443	803	58	404	874	290
Future Volume (veh/h)	340	420	210	104	640	245	443	803	58	404	874	290
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	370	457	228	113	696	0	482	873	63	439	950	315
Adj No. of Lanes	2	2	1	2	2	2	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1015	454	172	838	375	528	1695	528	447	1172	388
Arrive On Green	0.10	0.29	0.29	0.05	0.24	0.00	0.15	0.33	0.33	0.04	0.10	0.10
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3781	1251
Grp Volume(v), veh/h	370	457	228	113	696	0	482	873	63	439	950	315
Grp Sat Flow(s), veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1642
Q Serve(g, s), s	10.0	10.6	7.7	3.2	18.7	0.0	13.8	13.8	2.8	12.7	24.6	24.6
Cycle Q Clear(g, c), s	10.0	10.6	7.7	3.2	18.7	0.0	13.8	13.8	2.8	12.7	24.6	24.6
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	
Lane Grp Cap(c), veh/h	344	1015	454	172	838	375	528	1695	528	447	1051	509
V/C Ratio(X)	1.08	0.45	0.50	0.66	0.83	0.00	0.91	0.52	0.12	0.98	0.81	0.81
Avail Cap(c_a), veh/h	344	1168	523	172	1026	459	528	1695	528	447	1051	509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76
Uniform Delay (d), s/veh	45.0	29.2	12.4	46.7	36.3	0.0	41.7	26.8	23.1	47.7	42.0	42.0
Incr Delay (d2), s/veh	70.0	0.3	0.9	8.8	4.9	0.0	20.5	1.1	0.5	32.1	5.2	10.3
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	11.1	5.2	3.5	1.7	9.7	0.0	8.1	6.6	1.3	8.1	12.3	12.7
LnGrp Delay(d),s/veh	115.0	29.5	13.2	55.4	41.2	0.0	62.1	28.0	23.6	79.9	47.2	52.3
LnGrp LOS	F	C	B	E	D		E	C	C	E	D	D
Approach Vol, veh/h		1055			809			1418			1704	
Approach Delay, s/veh		56.0			43.2			39.4			56.9	
Approach LOS		E			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R), s	38.0	38.3	10.0	33.7	20.3	56.0	15.0	28.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	29.0	5.0	30.0	11.0	31.0	11.0	20.0	29.0				
Max Q Clear Time (g_c+Rc), s	15.8	5.2	12.6	15.8	26.6	12.0	20.7					
Green Ext Time (p_c), s	0.0	5.2	0.0	3.8	0.0	3.0	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay		49.5										
HCM 2010 LOS		D										
Notes												

Existing + Cuml Proj AM
5: Harmony Grove Rd & Enterprise St

Harmony Grove Parcel
11/20/2017

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	184	130	255	401	183	202		
Future Volume (veh/h)	184	130	255	401	183	202		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A, pbT)	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		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	200	141	277	436	199	220		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	303	257	351	839	656	899		
Arrive On Green	0.16	0.16	0.20	0.45	0.37	0.37		
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583		
Grp Volume(v), veh/h	200	141	277	436	199	220		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1863	1774	1583		
Q Serve(g_s), s	5.0	4.1	7.4	8.4	4.0	3.5		
Cycle Q Clear(g_c), s	5.0	4.1	7.4	8.4	4.0	3.5		
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	303	257	351	839	656	899		
V/C Ratio(X)	0.66	0.55	0.79	0.52	0.30	0.24		
Avail Cap(c_a), veh/h	614	522	585	1396	656	899		
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	19.7	19.3	19.1	9.9	11.2	5.4		
Incr Delay (d2), s/veh	2.5	1.8	4.0	0.5	1.2	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	2.3	1.9	4.0	4.4	2.2	1.7		
LnGrp Delay(d),s/veh	22.1	21.1	23.0	10.4	12.4	6.1		
LnGrp LOS	C	C	C	B	B	A		
Approach Vol, veh/h	341			713	419			
Approach Delay, s/veh	21.7			15.3	9.1			
Approach LOS	C			B	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		23.0	14.4	12.6				27.0
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		18.5	16.5	16.5				37.5
Max Q Clear Time (g_c+I1), s		6.0	9.4	7.0				10.4
Green Ext Time (p_c), s		1.1	0.5	1.1				2.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
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Existing + Cuml Proj AM
6: Citracado Pkwy & Avenida del Diablo

Harmony Grove Parcel
11/20/2017

Intersection	
Int Delay, s/veh	3.4
Movement	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Lane Configurations	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Traffic Vol, veh/h	0 0 22 0 0 259 11 162 151 0 285 0
Future Vol, veh/h	0 0 22 0 0 259 11 162 151 0 285 0
Conflicting Peds, #/hr	0 0 0 0 0 0 0 0 0 0 0 0
Sign Control	Stop Stop Stop Stop Stop Stop Free Free Free Free Free Free
RT Channelized	- - None - - None - - None - - None - - None
Storage Length	- - 0 - - 0 150 - - 150 - - 0 -
Veh in Median Storage, #	- 0 - - 0 - - 0 - - 0 - - 0 -
Grade, %	- 0 - - 0 - - 0 - - 0 - - 0 -
Peak Hour Factor	92 92 92 92 92 92 92 92 92 92 92 92
Heavy Vehicles, %	2 2 2 2 2 2 2 2 2 2 2 2
Mvmt Flow	0 0 24 0 0 282 12 176 164 0 310 0
Major/Minor	Minor2 Minor1 Major1 Major2
Conflicting Flow All	- - 155 - - 88 310 0 0 - - 0
Stage 1	- - - - - - - - - - - -
Stage 2	- - 6.94 - - 6.94 4.14 - - - - - -
Critical Hdwy Stg 1	- - - - - - - - - - - -
Critical Hdwy Stg 2	- - - - - - - - - - - -
Follow-up Hdwy	- - 3.32 - - 3.32 2.22 - - - - - -
Pot Cap-1 Maneuver	0 0 863 0 0 953 1247 - - 0 0 - -
Stage 1	0 0 - 0 0 - - - - 0 - - -
Stage 2	0 0 - 0 0 - - - - 0 - - -
Platoon blocked, %	- - - - - - - - - - - -
Mov Cap-1 Maneuver	- - 863 - - 953 1247 - - - - - -
Mov Cap-2 Maneuver	- - - - - - - - - - - -
Stage 1	- - - - - - - - - - - -
Stage 2	- - - - - - - - - - - -
Approach	EB WB NB SB
HCM Control Delay, s	9.3 10.4 0.3 0
HCM LOS	A B
Minor Lane/Major Mvmt	NBL NBT NBR EBLN1WBUn1 SBT SBR
Capacity (veh/h)	1247 - - 863 953 - -
HCM Lane V/C Ratio	0.01 - - 0.028 0.295 - -
HCM Control Delay (s)	7.9 - - 9.3 10.4 - -
HCM Lane LOS	A - - A B - -
HCM 95th %ile Q(veh)	0 - - 0.1 1.2 - -

Approach	EB WB NB SB
HCM Control Delay, s	9.3 10.4 0.3 0
HCM LOS	A B
Minor Lane/Major Mvmt	NBL NBT NBR EBLN1WBUn1 SBT SBR
Capacity (veh/h)	1247 - - 863 953 - -
HCM Lane V/C Ratio	0.01 - - 0.028 0.295 - -
HCM Control Delay (s)	7.9 - - 9.3 10.4 - -
HCM Lane LOS	A - - A B - -
HCM 95th %ile Q(veh)	0 - - 0.1 1.2 - -

HCM 2010 TWSC
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Existing+Cumulative Projects AM
7: I-15 NB Ramps & Valley Pkwy

Harmony Grove Parcel
11/20/2017

	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Movement	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Lane Configurations	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Traffic Volume (veh/h)	447 946 0 0 966 201 440 3 470 0 0 0 0
Future Volume (veh/h)	447 946 0 0 966 201 440 3 470 0 0 0 0
Number	5 2 12 1 6 16 3 8 18
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
Adj Sat Flow, veh/h/ln	1863 1863 0 0 1863 1863 1863 1863
Adj Flow Rate, veh/h	486 1028 0 0 1050 218 478 3 511
Adj No. of Lanes	2 3 0 0 3 1 0 1 1
Peak Hour Factor	0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
Percent Heavy Veh, %	2 2 0 0 2 2 2 2
Cap, veh/h	564 2640 0 0 1603 498 679 4 606
Arrive On Green	0.16 0.52 0.00 0.00 0.32 0.32 0.38 0.38
Sat Flow, veh/h	3442 5253 0 0 5253 1579 1764 11 1576
Grp Volume(V), veh/h	486 1028 0 0 1050 218 481 0 511
Grp Sat Flow(s),veh/h/ln	1721 1695 0 0 1695 1579 1775 0 1576
Q Serve(g_s), s	14.4 12.8 0.0 0.0 18.7 11.5 24.0 0.0 31.0
Cycle Q Clear(g_c), s	14.4 12.8 0.0 0.0 18.7 11.5 24.0 0.0 31.0
Prop In Lane	1.00 1.00 0.00 0.00 1.00 0.99 1.00
Lane Grp Cap(c), veh/h	564 2640 0 0 1603 498 683 0 606
V/C Ratio(X)	0.86 0.39 0.00 0.00 0.65 0.44 0.70 0.00 0.84
Avail Cap(c_a), veh/h	682 2640 0 0 1603 498 683 0 606
HCM Platoon Ratio	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Upstream Filter(I)	0.77 0.77 0.00 0.00 1.00 1.00 1.00 0.00 1.00
Uniform Delay (d), s/veh	42.7 15.2 0.0 0.0 31.0 28.6 27.3 0.0 29.4
Incr Delay (d2), s/veh	7.5 0.3 0.0 0.0 2.1 2.8 6.0 0.0 13.4
Initial Q Delay(d3),s/veh	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
%ile BackOfQ(50%),veh/ln	7.5 6.1 0.0 0.0 9.1 5.4 12.9 0.0 15.7
LnGrp Delay(d),s/veh	50.3 15.6 0.0 0.0 33.1 31.3 33.3 0.0 42.8
LnGrp LOS	D B C C C D
Approach Vol, veh/h	1514 1268 992
Approach Delay, s/veh	26.7 38.2
Approach LOS	C C D
Timer	1 2 3 4 5 6 7 8
Assigned Phs	2 5 6 8
Phs Duration (G+Y+Rc), s	60.0 21.4 38.6 45.0
Change Period (Y+Rc), s	5.5 * 4.2 5.5 4.6
Max Green Setting (Gmax), s	54.5 * 21 29.5 40.4
Max Q Clear Time (g_c+I1), s	14.8 16.4 20.7 33.0
Green Ext Time (p_c), s	8.0 0.8 4.7 3.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
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Existing+Cumulative Projects AM
8: Shopping Ctr Dwyl/I-15 SB Ramps & Valley Pkwy

Harmony Grove Parcel
11/20/2017

	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Movement	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Lane Configurations	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Traffic Volume (veh/h)	79 870 90 200 936 270 70 80 170 353 120 650
Future Volume (veh/h)	79 870 90 200 936 270 70 80 170 353 120 650
Number	5 2 12 1 6 16 3 8 18 7 4 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 0.99 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
Adj Sat Flow, veh/h/ln	1863 1863 1863 1863 1863 1863 1863 1863
Adj Flow Rate, veh/h	86 946 98 217 1064 262 76 87 185 384 130 707
Adj No. of Lanes	2 3 1 2 4 1 1 1 1 0 2 0
Peak Hour Factor	0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
Percent Heavy Veh, %	2 2 2 2 2 2 2 2
Cap, veh/h	134 1180 366 284 2033 430 217 228 321 562 190 664
Arrive On Green	0.04 0.23 0.23 0.08 0.27 0.27 0.12 0.12 0.42 0.42 0.42 0.42
Sat Flow, veh/h	3442 5085 1579 3548 7451 1575 1774 1863
Grp Volume(V), veh/h	86 946 98 217 1064 262 76 87 185 514 0 707
Grp Sat Flow(s),veh/h/ln	1721 1695 1579 1774 1863 1575 1774 1863
Q Serve(g_s), s	3.1 21.9 6.4 7.5 15.1 18.1 4.9 5.4 13.2 29.1 0.0 52.4
Cycle Q Clear(g_c), s	3.1 21.9 6.4 7.5 15.1 18.1 4.9 5.4 13.2 29.1 0.0 52.4
Prop In Lane	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.75 1.00
Lane Grp Cap(c), veh/h	134 1180 366 284 2033 430 217 228 321 753 0 664
V/C Ratio(X)	0.64 0.80 0.27 0.76 0.52 0.61 0.35 0.38 0.58 0.68 0.00 1.07
Avail Cap(c_a), veh/h	242 1180 366 335 2033 430 227 238 329 753 0 664
HCM Platoon Ratio	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Upstream Filter(I)	1.00 1.00 1.00 0.66 0.66 0.66 1.00 1.00 1.00 1.00 1.00
Uniform Delay (d), s/veh	59.2 45.3 39.3 56.4 38.5 39.6 50.3 50.5 45.0 29.5 0.0 36.3
Incr Delay (d2), s/veh	5.0 5.8 1.8 5.9 0.2 1.7 1.0 1.0 2.4 2.5 0.0 53.6
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	1.6 10.9 3.0 3.9 7.8 8.1 2.5 2.8 6.0 15.0 0.0 32.7
LnGrp Delay(d),s/veh	64.2 51.1 41.1 62.2 38.7 41.3 51.2 51.5 47.4 32.1 0.0 89.9
LnGrp LOS	E D D E D D D D D C C F
Approach Vol, veh/h	1130 1543 348 1221
Approach Delay, s/veh	51.2 42.4 49.3 65.6
Approach LOS	D D D E
Timer	1 2 3 4 5 6 7 8
Assigned Phs	1 2 4 5 6 8
Phs Duration (G+Y+Rc), s	14.2 34.5 57.0 9.1 39.6 19.3
Change Period (Y+Rc), s	* 4.2 5.5 4.6 * 4.2 5.5 4.0
Max Green Setting (Gmax), s	* 12 26.5 52.4 * 8.9 29.5 16.0
Max Q Clear Time (g_c+I1), s	9.5 23.9 54.4 5.1 20.1 15.2
Green Ext Time (p_c), s	0.2 1.5 0.0 0.1 5.1 0.1

Intersection Summary	
HCM 2010 Ctrl Delay	52.0
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
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HCM 2010 Signalized Intersection Summary
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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (veh/h)	176	318	15	150	328	180	20	680	170	120	1180	282
Future Volume (veh/h)	176	318	15	150	328	180	20	680	170	120	1180	282
Number	7	4	14	3	8	19	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	191	346	16	163	357	196	22	239	185	130	1283	307
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	783	36	199	469	253	34	1371	339	162	1677	401
Arrive On Green	0.13	0.23	0.23	0.11	0.21	0.21	0.02	0.34	0.34	0.09	0.41	0.41
Sat Flow, veh/h	1774	3445	159	1774	2222	1199	1774	4068	1007	1774	4100	980
Grp Volume(v), veh/h	191	177	185	163	283	270	2	615	309	130	1061	529
Grp Sat Flow(s), veh/h/ln	1774	1774	1863	1774	1770	1651	1774	1695	1685	1774	1695	1690
Q Serve(s/g_c), s	9.1	7.4	7.4	7.7	12.9	13.3	1.1	12.6	12.8	6.2	23.2	23.2
Cycle Q Clear(g_c), s	9.1	7.4	7.4	7.7	12.9	13.3	1.1	12.6	12.8	6.2	23.2	23.2
Prop In Lane	1.00		0.09	1.00		0.73	1.00		0.60	1.00		0.58
Lane Grp Cap(c), veh/h	227	402	47	199	374	349	34	1142	568	162	1387	691
V/C Ratio(Q)	0.84	0.44	0.44	0.82	0.76	0.77	0.05	0.54	0.54	0.80	0.76	0.77
Avail Cap(c_a), veh/h	268	596	618	268	596	556	82	1142	568	186	1387	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	28.5	28.6	37.4	31.9	32.0	41.9	23.1	23.2	38.4	21.9	21.9
Incr Delay (d2), s/veh	18.2	0.8	0.7	13.5	3.2	3.7	19.3	1.8	3.7	19.8	4.1	7.9
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	3.7	3.8	4.6	6.6	6.4	6.7	6.2	6.5	6.9	5.8	15.5	12.2
LnGrp Delay(d),s/veh	54.8	29.3	29.3	50.9	35.0	35.7	61.2	24.9	26.9	58.2	25.9	29.8
LnGrp LOS	D	C	D	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h	553			716			946			1720		
Approach Delay, s/veh	38.1			38.9			26.4			29.6		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R												

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Harmony Grove Parcel
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	10	386	90	12	52	325	317	43	138	1037	27
Future Volume (veh/h)	83	10	386	90	12	52	325	317	43	138	1037	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	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
Adj Sat Flow, veh/h/s	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	90	11	203	98	13	57	353	345	47	150	1127	29
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	285	242	124	293	249	388	1486	201	186	1270	33
Arrive On Green	0.07	0.15	0.15	0.07	0.16	0.16	0.22	0.47	0.47	0.10	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1774	1788	1474	1774	1847
Grp Volume(v), veh/h	90	11	203	98	13	57	353	345	198	150	566	59
Grp Sat Flow(s), veh/h/s	1774	1863	1583	1774	1863	1583	1774	1774	1788	1774	1770	1847
Q Serve(Q_s), s	4.5	0.5	11.3	4.9	0.5	2.9	17.6	5.9	6.0	7.5	27.3	27.3
Cycle Q Clear(q_c), s	4.5	0.5	11.3	4.9	0.5	2.9	17.6	5.9	6.0	7.5	27.3	27.3
Prop In Lane	1.00								0.24	1.00		0.05
Lane Phs Cap(c), veh/h	116	285	242	124	293	249	388	839	848	186	637	665
W/C Ratio(r)	0.78	0.04	0.84	0.79	0.04	0.23	0.91	0.23	0.23	0.61	0.89	0.89
Avail Cap(c_a), veh/h	237	585	498	129	472	402	421	639	648	342	691	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	41.7	32.7	37.3	41.5	32.4	33.4	34.6	14.1	14.1	39.7	27.3	27.3
Incr Delay (d2), s/veh	10.6	0.1	7.6	26.5	0.1	0.5	22.6	0.1	0.1	8.1	12.8	12.3
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/lt/6	0.2	5.5	3.3	0.3	1.3	11.1	29.0	1.2	1.2	4.1	15.5	16.1
LnGrp Delay(d4), s/veh	52.3	32.8	44.9	68.0	32.5	33.8	57.1	14.2	14.2	47.8	40.0	39.6
LnGrp LOS	D	C	D	E	C	C	E	B	B	D	D	D
Approach Vol, veh/h		304			168			745		1306		
Approach Delay, s/veh		46.7			53.7			34.6		40.7		
Approach LOS		D			D			C		D		
Timer	1	2	3	4	5	6</						

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (veh/h)	0	580	658	127	1214	0	0	0	0	163	7	77			
Future Volume (veh/h)	0	580	658	127	1214	0	0	0	0	163	7	77			
Number	5	2	12	1	6	16				7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	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			
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776			
Adj Flow Rate, veh/h	0	744	700	1481	1412	0				218	0	101			
Adj No. of Lanes	0	2	1	1	2	0				2	0	1			
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76			
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7			
Cap, veh/h	0	2093	919	221	2691	0				324	0	145			
Arrive On Green	0.00	0.62	0.62	0.13	0.80	0.00				0.10	0.00	0.10			
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509			
Grp Volume(v), veh/h	0	744	700	1481	1412	0				218	0	101			
Grp Sat Flow(s),veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509			
Q Serve(g_s), s	0.0	9.7	30.6	9.6	13.1	0.0				5.6	0.0	5.8			
Cycle Q Clear(g_c), s	0.0	9.7	30.6	9.6	13.1	0.0				5.6	0.0	5.8			
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00			
Lane Grp Cap(c), veh/h	0	2093	919	221	2691	0				324	0	145			
HC Ratio(X)	0.00	0.36	0.78	0.83	0.52	0.00				0.67	0.00	0.70			
Avail Cap(c_s), veh/h	0	2093	919	297	2691	0				676	0	302			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	1.00	1.00	0.73	0.73				1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.3	12.3	38.2	3.2	0.0				39.3	0.0	39.4			
Incr Delay (d2), s/veh	0.0	0.5	5.9	10.6	0.5	0.0				2.4	0.0	6.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0			
%Late BackOf(50%),veh/h/0.0	0.0	4.6	13.8	5.1	6.1	0.0				2.7	0.0	2.7			
LnGrp Delay(d),s/veh	0.0	8.8	18.2	48.8	3.7	0.0				41.7	0.0	45.4			
LnGrp LOS		A	B	D	A					D		D			
Approach Vol, veh/h		1444			1596						319				
Approach Delay, s/veh		13.4			8.9						42.9				
Approach LOS		B			A						D				
Timer	1	2	3	4	5	6	7	8							
Assigned Phs	1	2		4		6									
Phs Duration (G+Y+Rc), s	15.9	60.8		13.2		76.8									
Change Period (Y+Rc), s	4.2	5.0		4.6		5.0									
Max Green Setting (Gmax), s	42.4			18.0		62.4									
Max Q Clear Time (g_c+M), s				32.6		7.8		15.1							
Green Ext Time (p_c), s	0.2	5.6		0.8		16.2									
Intersection Summary															
HCM 2010 Ctrl Delay				14.1											
HCM 2010 LOS				B											
Notes															

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (veh/h)	118	625	0	0	665	318	676	1	187	0	0	0			
Future Volume (veh/h)	118	625	0	0	665	318	676	1	187	0	0	0			
Number	5	2	12	1	6	16	3	8	18						
Q (Qb), veh	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj (A _p BT)	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						
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776						
Adj Flow Rate, veh/h	144	781	0	0	756	361	817	0	253						
Adj No. of Lanes	2	2	0	0	2	1	2	0	1						
Peak Hour Factor	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74						
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7						
Cap, veh/h	229	2026	0	0	1624	723	969	0	433						
Arrive On Green	0.07	0.60	0.00	0.00	0.48	0.48	0.29	0.00	0.29						
Sat Flow, veh/h	3281	3463	0	0	3463	1503	3382	0	1509						
Grp Volume(v), veh/h	144	781	0	0	756	361	817	0	253						
Grp Sat Flow(s), veh/h/ln	1640	1687	0	0	1687	1503	1691	0	1509						
Q Serve(g, s), s	3.6	10.2	0.0	0.0	12.7	13.9	19.3	0.0	12.2						
Cycle Q Clear(g, c), s	3.6	10.2	0.0	0.0	12.7	13.9	19.3	0.0	12.2						
Prop In Lane	1.00		0.00	0.00		1.00	1.00								
Lane Grp Cap(c), veh/h	229	2026	0	0	1624	723	969	0	433						
W/C Ratio(g, s)	0.63	0.39	0.00	0.00	0.47	0.50	0.84	0.00	0.58						
Avail Cap(c, a), veh/h	610	2026	0	0	1624	723	1210	0	540						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(i)	0.92	0.92	0.00	0.00	1.00	1.00	1.00	0.00	1.00						
Uniform Delay (d1), s/veh	38.5	8.8	0.0	0.0	14.7	15.0	28.5	0.0	26.0						
Incr Delay (d2), s/veh	2.6	0.5	0.0	0.0	0.2	0.5	4.6	0.0	1.3						
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%), veh/ln	7.7	4.8	0.0	0.0	5.9	5.8	9.6	0.0	5.2						
LnGrp Delay(d4), s/veh	41.1	9.3	0.0	0.0	14.9	15.6	33.1	0.0	27.2						
LnGrp LOS	D	A			B	B	C		C						
Approach Vol, veh/h		925			1117			1070							
Approach Delay, s/veh		14.3			15.1			31.7							
Approach LOS		B			B			C							
Timer	1	2	3	4	5	6	7	8							
Assigned Phs		2			5	6		8							
Phs Duration (G+Y+Rc), s		56.0			10.1	45.9		29.0							
Change Period (Y+Rc), s		5.0			* 4.2	5.0		4.6							
Max Green Setting (Gmax), s		45.0			* 16.2	25.0		30.4							
Max Q Clear Time (g_c+1), s		12.2			5.6	15.9		21.3							
Green Ext Time (p_c), s		6.4			0.3	4.4		3.0							
Intersection Summary															
HCM 2010 Ctrl Delay				20.6											
HCM 2010 LOS				C											
Notes															

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Intersection							
Intersection Delay, s/veh 9.8							
Intersection LOS A							
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔		↕			↕	
Traffic Vol, veh/h	22	92	224	60	85	153	
Future Vol, veh/h	22	92	224	60	85	153	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	24	100	243	65	92	166	
Number of Lanes	1	0	1	0	0	1	
Approach	WB	NB	SB				
Opposing Approach		SB	NB				
Opposing Lanes	0	1	1				
Conflicting Approach Left	NB		WB				
Conflicting Lanes Left	1	0	1				
Conflicting Approach Right	SB	WB					
Conflicting Lanes Right	1	1	0				
HCM Control Delay	8.7	10.1	10				
HCM LOS	A	B	A				
Lane	NBLn1	WBLn1	SBLn1				
Vol Left, %		0%	19%	36%			
Vol Thru, %		79%	0%	64%			
Vol Right, %		21%	81%	0%			
Sign Control		Stop	Stop	Stop			
Traffic Vol by Lane		284	114	238			
LT Vol		0	22	85			
Through Vol		224	0	153			
RT Vol		60	92	0			
Lane Flow Rate		309	124	259			
Geometry Grp		1	1	1			
Degree of Util (X)		0.377	0.163	0.333			
Departure Headway (Hd)		4.394	4.739	4.631			
Convergence, Y/N		Yes	Yes	Yes			
Cap		818	755	776			
Service Time		2.428	2.785	2.668			
HCM Lane VIC Ratio		0.378	0.164	0.334			
HCM Control Delay		10.1	8.7	10			
HCM Lane LOS		B	A	A			
HCM 95th-ile O		1.8	0.6	1.5			

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Intersection							
Intersection Delay, s/veh	11						
Intersection LOS	B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Vol, veh/h	156	235	182	55	7	194	
Future Vol, veh/h	156	235	182	55	7	194	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	170	255	198	60	8	211	
Number of Lanes	1	1	1	1	1	1	
Approach	EB	WB		SB			
Opposing Approach	WB	EB					
Opposing Lanes	2	2		0			
Conflicting Approach Left	SB			WB			
Conflicting Lanes Left	2	0		2			
Conflicting Approach Right		SB		EB			
Conflicting Lanes Right	0	2		2			
HCM Control Delay	11.5	10.4		10.9			
HCM LOS	B	B		B			
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	
Vol Left, %	100%	0%	0%	0%	100%	0%	
Vol Thru, %	0%	100%	100%	0%	0%	0%	
Vol Right, %	0%	0%	0%	100%	0%	100%	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	
Traffic Vol by Lane	156	235	182	55	7	194	
LT Vol	156	0	0	0	7	0	
Through Vol	0	235	182	0	0	0	
RT Vol	0	0	0	55	0	194	
Lane Flow Rate	170	255	198	60	8	211	
Geometry Grp	7	7	7	7	7	7	
Degree of Util (X)	0.283	0.39	0.314	0.083	0.014	0.325	
Departure Headway (Hd)	6	5.495	5.708	5	6.76	5.548	
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	
Cap	602	650	631	717	531	649	
Service Time	3.713	3.208	3.431	2.723	4.476	3.264	
HCM Lane VIC Ratio	0.282	0.389	0.314	0.084	0.015	0.325	
HCM Control Delay	11.1	11.7	11	8.2	9.6	10.9	
HCM Lane LOS	B	B	B	A	A	B	
HCM 95th-ile O	1.2	1.8	1.3	0.3	0	1.4	

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HCM 2010 TWSC
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Existing + Cuml Proj PM
2: Nordahl Rd & SR 78 EB Ramps

Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	60	499	0	0	0	0	1255	655	570	974	0
Future Volume (veh/h)	375	60	499	0	0	0	0	1364	712	620	1059	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	624	0	361				0	1364	712	620	1059	0
Adj No. of Lanes	2	0	1				0	2	2	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	917	0	409				0	1342	1056	722	2264	0
Arrive On Green	0.26	0.00	0.26				0.00	0.38	0.38	0.21	0.64	0.00
Sat Flow, veh/h	3548	0	1583				0	3632	2787	3442	3632	0
Grp Volume(v), veh/h	624	0	361				0	1364	712	620	1059	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1770	1393	1721	1770	0
Q Serve(g_s), s	17.4	0.0	24.1				0.0	41.7	23.4	19.1	16.9	0.0
Cycle Q Clear(g_c), s	17.4	0.0	24.1				0.0	41.7	23.4	19.1	16.9	0.0
Prop In Lane	1.00	1.00	1.00				0.00	1.00	1.00	1.00	0.00	1.00
Lane Grp Cap(c), veh/h	917	0	409				0	1342	1056	722	2264	0
V/C Ratio(X)	0.68	0.00	0.88				0.00	1.02	0.67	0.86	0.47	0.00
Avail Cap(c_a), veh/h	1064	0	475				0	1342	1056	722	2264	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.47	0.47	0.52	0.52	0.00
Uniform Delay (d), s/veh	36.7	0.0	39.2				0.0	34.1	28.5	41.9	10.2	0.0
Incr Delay (d2), s/veh	1.5	0.0	15.8				0.0	21.1	1.6	5.6	0.4	0.0
Initial Q Delay(i3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	0.0	12.3				0.0	24.3	9.2	9.6	8.4	0.0
LnGrp Delay(d),s/veh	38.2	0.0	55.0				0.0	55.3	30.1	47.5	10.5	0.0
LnGrp LOS	D		E					F	C	D	B	
Approach Vol, veh/h	985						2076				1679	
Approach Delay, s/veh	44.3						46.7				24.2	
Approach LOS	D						D				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	47.3			34.0		76.0						
Change Period (Y+Rc), s	5.6			5.6		5.6						
Max Green Setting (Gmax), s	42			33.0		65.8						
Max Q Clear Time (g_c+H), s	43.7			26.1		18.9						
Green Ext Time (p_c), s	0.0	0.0		2.3		10.1						
Intersection Summary												
HCM 2010 Ctrl Delay	38.2											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj PM
3: Auto Park Way/Nordahl Rd & E Mission Rd

Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	800	349	40	430	500	393	995	63	190	657	360
Future Volume (veh/h)	450	800	349	40	430	500	393	995	63	190	657	360
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	489	870	379	43	467	0	427	1082	68	207	714	391
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	1064	476	96	610	273	379	1729	538	452	1225	572
Arrive On Green	0.16	0.30	0.30	0.03	0.17	0.00	0.11	0.34	0.34	0.13	0.36	0.36
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3390	1583
Grp Volume(v), veh/h	489	870	379	43	467	0	427	1082	68	207	714	391
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	14.0	22.8	15.4	1.2	12.6	0.0	11.0	17.8	3.0	5.6	17.0	20.9
Cycle Q Clear(g_c), s	14.0	22.8	15.4	1.2	12.6	0.0	11.0	17.8	3.0	5.6	17.0	20.9
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	538	1064	476	96	610	273	379	1729	538	452	1225	572
V/C Ratio(X)	0.91	0.82	0.80	0.45	0.77	0.00	1.13	0.63	0.13	0.46	0.58	0.68
Avail Cap(c_a), veh/h	538	1239	554	138	1026	459	379	1729	538	452	1225	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	41.5	32.4	15.7	47.8	39.5	0.0	44.5	27.7	22.8	40.1	25.8	27.1
Incr Delay (d2), s/veh	19.5	3.9	6.9	3.2	2.0	0.0	85.7	1.7	0.5	0.6	1.7	5.5
Initial Q Delay(i3), 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/h	0.0	11.7	7.6	0.6	6.3	0.0	9.7	8.6	1.4	2.7	8.2	10.0
LnGrp Delay(d),s/veh	60.9	36.3	22.7	51.1	41.5	0.0	130.2	29.4	23.2	40.7	27.5	32.6
LnGrp LOS	E	D	C	D	D		F	C	C	D	C	C
Approach Vol, veh/h	1738					510		1577			1312	
Approach Delay, s/veh	40.3					56.4		42.3			31.1	
Approach LOS	D					E		C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	88.1	39.0	7.8	35.1	16.0	41.1	20.6	22.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	34.0	4.0	35.0	11.0	30.0	10.0	28.0					
Max Q Clear Time (g_c+H), s	19.8	3.2	24.8	13.0	22.9	16.0	14.6					
Green Ext Time (p_c), s	0.0	6.7	0.0	5.3	0.0	4.0	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay	43.1											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	5	43	5	5	5	109	1000	5	80	880	326
Future Volume (veh/h)	271	5	43	5	5	5	109	1000	5	80	880	326
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	295	5	47	5	5	5	118	1087	5	87	957	354
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	451	383	413	207	207	149	1969	9	112	1330	488
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.08	0.55	0.55	0.06	0.52	0.52
Sat Flow, veh/h	1399	1863	1583	1347	856	856	1774	3613	17	1774	2537	931
Grp Volume(v), veh/h	295	5	47	5	0	10	118	532	560	87	665	646
Grp Sat Flow(s),veh/h/ln	1399	1863	1583	1347	0	1712	1774	1770	1860	1774	1770	1698
Q Serve(g_s), s	16.3	0.2	1.9	0.2	0.0	0.4	5.2	15.7	15.7	3.9	23.0	23.4
Cycle Q Clear(g_c), s	16.7	0.2	1.9	0.4	0.0	0.4	5.2	15.7	15.7	3.9	23.0	23.4
Prop In Lane	1.00	1.00	1.00	1.00	0.50	1.00	0.01	1.00	1.00	1.00	0.55	1.00
Lane Grp Cap(c), veh/h	422	451	383	413	0	414	149	964	1014	112	928	890
V/C Ratio(X)	0.70	0.01	0.12	0.01	0.00	0.02	0.79	0.55	0.55	0.77	0.72	0.73
Avail Cap(c_a), veh/h	555	628	534	541	0	577	199	964	1014	221	928	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	23.1	23.7	23.2	0.0	23.2	36.0	11.9	11.9	37.0	14.5	14.6
Incr Delay (d2), s/veh	2.6	0.0	0.1	0.0	0.0	0.0	14.2	2.3	2.2	10.8	4.7	5.1
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/lt6.6	0.1	0.8	0.1	0.0	0.2	0.1	8.2	8.5	2.2	12.3	12.2	12.1
LnGrp Delay(d),s/veh	32.1	23.1	23.9	23.2	0.0	23.2	50.2	14.1	14.0	47.7	19.3	19.8
LnGrp LOS	C	C	C	C		C	D	B	B	D	B	B
Approach Vol, veh/h	347				15		1210			1398		
Approach Delay, s/veh	30.9				23.2		17.6			21.3		
Approach LOS	C				C		B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	47.1	47.7		23.4	10.7	46.0				23.4		
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0				4.0		
Max Green Setting (Gmax), s	41.0	41.0		27.0	9.0	42.0				27.0		
Max Q Clear Time (g_c+I), s	17.7	17.7		18.7	7.2	25.4				24.0		
Green Ext Time (p_c), s	0.1	7.9		0.7	0.0	8.6			0.0			
Intersection Summary												
HCM 2010 Ctrl Delay	20.9											
HCM 2010 LOS	C											

Existing + Cuml Proj PM
6: Citracado Pkwy & Avenida del Diablo
Harmony Grove Parcel
11/20/2017

Intersection													
Int Delay, s/veh 2.7													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	0	0	18	0	0	222	22	202	112	0	411	0	
Future Vol, veh/h	0	0	18	0	0	222	22	202	112	0	411	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	0	-	-	0	150	-	150	-	-	-	
Vel in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	-	
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	20	0	0	241	24	220	122	0	447	0	
Major/Minor													
Conflicting Flow All	-	-	224	-	-	110	447	0	0	-	-	0	
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	-	-	-	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	-	-	-	
Pot Cap-1 Maneuver	0	0	779	0	0	922	1110	-	-	0	-	-	
Stage 1	0	0	-	0	0	-	-	-	-	0	-	-	
Stage 2	0	0	-	0	0	-	-	-	-	0	-	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	779	-	-	922	1110	-	-	-	-	-	
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	
Approach													
HCM Control Delay, s	9.7			10.3				0.5				0	
HCM LOS	A			B									
Minor Lane/Major Mvmt													
Capacity (veh/h)	1110	-	-	779	922	-	-	-	-	-	-	-	
HCM Lane V/C Ratio	0.022	-	-	0.025	0.262	-	-	-	-	-	-	-	
HCM Control Delay (s)	8.3	-	-	9.7	10.3	-	-	-	-	-	-	-	
HCM Lane LOS	A	-	-	A	B	-	-	-	-	-	-	-	
HCM 95th Vtile Q (veh)	0.1	-	-	0.1	1.1	-	-	-	-	-	-	-	

HCM 2010 TWSC
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Existing+Cumulative Projects PM
7: I-15 NB Ramps & Valley Pkwy
Harmony Grove Parcel
11/20/2017

Intersection													
Int Delay, s/veh 2.7													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	810	1374	0	0	1150	373	310	1	430	0	0	0	
Future Volume (veh/h)	810	1374	0	0	1150	373	310	1	430	0	0	0	
Number	5	2	12	1	6	16	3	8	18				
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		0.99	1.00		0.99				
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	
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863				
Adj Flow Rate, veh/h	880	1493	0	0	1250	405	337	1	467				
Adj No. of Lanes	2	3	0	0	3	1	0	1	1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2				
Cap, veh/h	914	2853	0	0	1298	402	607	2	538				
Arrive On Green	0.27	0.56	0.00	0.00	0.26	0.26	0.34	0.34	0.34				
Sat Flow, veh/h	3442	5253	0	0	5253	1574	1769	5	1569				
Grp Volume(V), veh/h	880	1493	0	0	1250	405	338	0	467				
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1574	1774	0	1569				
Q Serve(g_s), s	26.5	19.2	0.0	0.0	25.5	26.8	16.2	0.0	29.2				
Cycle Q Clear(g_c), s	26.5	19.2	0.0	0.0	25.5	26.8	16.2	0.0	29.2				
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00		1.00				
Lane Grp Cap(c), veh/h	914	2853	0	0	1298	402	608	0	538				
V/C Ratio(X)	0.96	0.52	0.00	0.00	0.96	1.01	0.56	0.00	0.87				
Avail Cap(c_a), veh/h	914	2853	0	0	1298	402	608	0	538				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	0.29	0.29	0.00	0.00	1.00	1.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	38.0	14.3	0.0	0.0	38.6	39.1	28.0	0.0	32.3				
Incr Delay (d2), s/veh	8.9	0.2	0.0	0.0	17.6	46.9	3.6	0.0	17.1				
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%), veh/h	13.7	8.9	0.0	0.0	14.0	16.8	8.6	0.0	15.1				
LnGrp Delay(d), s/veh	46.9	14.5	0.0	0.0	56.2	86.1	31.6	0.0	49.3				
LnGrp LOS	D	B			E	F	C		D				
Approach Vol, veh/h	2373				1655				805				
Approach Delay, s/veh	26.5				63.5				41.9				
Approach LOS	C				E				D				
Timer													
Assigned Phs	2				5	6			8				
Phs Duration (G+Y+Rc), s	64.4				32.1	32.3			40.6				
Change Period (Y+Rc), s	5.5				*4.2	5.5			4.6				
Max Green Setting (Gmax), s	59.9				*28	26.8			36.0				
Max Q Clear Time (g_c+I1), s	21.2				28.5	28.8			31.2				
Green Ext Time (p_c), s	13.4				0.0	0.0			1.8				
Intersection Summary													
HCM 2010 Ctrl Delay					41.8								
HCM 2010 LOS					D								
Notes													

HCM 2010 Signalized Intersection Summary
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Existing+Cumulative Projects PM
8: Shopping Ctr Dwy/I-15 SB Ramps & Valley Pkwy
Harmony Grove Parcel
11/20/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	84	1593	120	270	780	410	80	70	330	261	150	420	
Future Volume (veh/h)	84	1593	120	270	780	410	80	70	330	261	150	420	
Number	5	2	12	1	6	16	3	8	18	7	4	14	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)			0.99	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	
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	
Adj Flow Rate, veh/h	91	1732	130	293	823	463	87	76	359	284	163	457	
Adj No. of Lanes	2	3	1	2	3	2	1	1	1	0	2	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	139	1827	565	330	2302	1305	218	229	194	326	187	448	
Arrive On Green	0.04	0.36	0.36	0.09	0.41	0.41	0.12	0.12	0.12	0.28	0.28	0.28	
Sat Flow, veh/h	3442	5085	1573	3548	5588	3167	1774	1863	1579	1147	658	1580	
Grp Volume(v), veh/h	91	1732	130	293	823	463	87	76	359	447	0	457	
Grp Sat Flow(s),veh/h/ln	1721	1695	1573	1774	1863	1583	1774	1863	1579	1805	0	1580	
Q Serve(g_s), s	3.4	43.0	7.5	10.6	13.2	13.1	5.9	4.8	16.0	30.6	0.0	36.9	
Cycle Q Clear(g_c), s	3.4	43.0	7.5	10.6	13.2	13.1	5.9	4.8	16.0	30.6	0.0	36.9	
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.64	1.00	1.00	
Lane Grp Cap(c), veh/h	139	1827	565	330	2302	1305	218	229	194	512	0	448	
V/C Ratio(X)	0.66	0.95	0.23	0.89	0.36	0.35	0.40	0.33	1.85	0.87	0.00	1.02	
Avail Cap(c_a), veh/h	228	1827	565	330	2302	1305	218	229	194	512	0	448	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.18	0.18	0.18	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	61.5	40.5	29.1	58.3	26.4	26.3	52.6	52.1	57.0	44.3	0.0	46.6	
Incr Delay (d2), s/veh	5.2	11.9	0.9	5.6	0.0	0.0	1.2	0.8	400.3	15.2	0.0	47.4	
Initial 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	17	22.1	3.4	5.5	6.8	5.7	2.9	2.5	28.6	17.4	0.0	22.0	
LnGrp Delay (d),s/veh	66.7	52.4	30.0	63.9	26.4	26.4	53.7	52.9	457.3	59.5	0.0	93.9	
LnGrp LOS	E	D	C	E	C	C	D	D	F	E		F	
Approach Vol, veh/h	1953			1579			522			904			
Approach Delay, s/veh	51.6			33.3			331.1			76.9			
Approach LOS	D			C			F			E			
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	1	2	4	5	6	8							
Phs Duration (G+Y+Rc), s	16.3	52.2		41.5	9.4	59.1	20.0						
Change Period (Y+Rc), s	* 4.2	5.5		4.6	* 4.2	5.5	4.0						
Max Green Setting (Gmax), s	* 12	46.7		36.9	* 8.6	50.2	16.0						
Max Q Clear Time (g_c+I1), s	12.6	45.0		38.9	5.4	15.2	18.0						
Green Ext Time (p_c), s	0.0	1.4		0.0	0.1	8.5	0.0						
Intersection Summary													
HCM 2010 Ctrl Delay													
HCM 2010 LOS													
E													
Notes													

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	500	15	220	272	95	30	995	230	140	831	198
Future Volume (veh/h)	293	500	15	220	272	95	30	995	230	140	831	198
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	318	543	16	239	296	103	33	1082	250	152	903	215
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	710	21	275	481	164	45	1422	328	122	1592	378
Arrive On Green	0.17	0.20	0.20	0.16	0.19	0.03	0.34	0.34	0.07	0.39	0.39	0.39
Sat Flow, veh/h	1774	3511	103	1774	2592	884	1774	4131	954	1774	4107	974
Grp Volume(v), veh/h	318	273	286	239	200	199	33	888	444	152	745	373
Grp Sat Flow(s), veh/h/ln	1774	1770	1845	1774	1770	1707	1774	1695	1694	1774	1695	1691
Q Serve(g_s), s	15.0	12.7	12.7	11.5	9.1	9.4	1.6	20.3	20.3	6.0	15.0	15.1
Cycle Q Clear(g_c), s	15.0	12.7	12.7	11.5	9.1	9.4	1.6	20.3	20.3	6.0	15.0	15.1
Prop In Lane	1.00	0.06	1.00	0.52	1.00	0.56	1.00	0.56	1.00	0.02	1.00	0.58
Lane Grp Cap(c), veh/h	305	358	373	275	328	317	45	1167	583	122	1314	656
V/C Ratio(X)	1.04	0.76	0.77	0.87	0.61	0.63	0.74	0.76	0.76	1.24	0.57	0.57
Avail Cap(c_a), veh/h	305	589	614	305	589	568	81	1167	583	122	1314	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	32.8	32.8	35.9	32.6	32.7	42.2	25.4	25.4	40.6	20.9	21.0
Incr Delay (d2), s/veh	62.8	3.4	3.3	20.9	1.8	2.0	20.7	4.7	9.1	161.3	1.8	3.6
Initial Q Delay(i3), 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/h	82.6	6.6	6.8	7.2	4.6	4.6	1.0	10.3	11.0	8.4	7.4	7.7
LnGrp Delay(d), s/veh	98.9	36.2	36.1	56.9	34.4	34.8	62.9	30.1	34.5	201.9	22.7	24.5
LnGrp LOS	F	D	D	E	C	C	E	C	C	F	C	C
Approach Vol, veh/h	877			638			1365			1270		
Approach Delay, s/veh	58.9			42.9			37.3			44.7		
Approach LOS	E			D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	18.5	22.6	7.2	38.8	20.0	21.2					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
Max Green Setting (Gmax), s	30.0	15.0	20.0	4.0	32.0	15.0	20.0					
Max Q Clear Time (g_c+10), s	22.3	13.5	14.7	3.6	17.1	17.0	11.4					
Green Ext Time (p_c), s	0.0	5.0	0.1	2.9	0.0	6.7	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay	43.4											
HCM 2010 LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	22	15	11	17	35	19	1171	11	68	827	114
Future Volume (veh/h)	55	22	15	11	17	35	19	1171	11	68	827	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	60	24	16	12	18	38	21	1273	12	74	899	124
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	61	41	85	26	54	36	1776	17	93	1864	834
Arrive On Green	0.06	0.06	0.06	0.05	0.05	0.05	0.02	0.49	0.49	0.05	0.53	0.53
Sat Flow, veh/h	1774	1044	696	1774	535	1129	1774	3593	34	1774	3539	1583
Grp Volume(v), veh/h	60	0	40	12	0	56	21	627	658	74	899	124
Grp Sat Flow(s), veh/h/ln	1774	0	1740	1774	0	1664	1774	1770	1857	1774	1770	1583
Q Serve(g_s), s	1.7	0.0	1.2	0.3	0.0	1.7	0.6	14.4	14.4	2.1	8.4	2.1
Cycle Q Clear(g_c), s	1.7	0.0	1.2	0.3	0.0	1.7	0.6	14.4	14.4	2.1	8.4	2.1
Prop In Lane	1.00	0.40	1.00	0.68	1.00	0.68	1.00	0.02	1.00	1.00	0.02	1.00
Lane Grp Cap(c), veh/h	104	0	102	85	0	80	36	875	918	93	1864	834
V/C Ratio(X)	0.58	0.00	0.39	0.14	0.00	0.70	0.59	0.72	0.72	0.80	0.48	0.15
Avail Cap(c_a), veh/h	546	0	536	546	0	512	137	875	918	147	1864	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	23.6	23.7	0.0	24.4	25.3	10.3	10.3	24.4	7.8	6.3
Incr Delay (d2), s/veh	4.9	0.0	2.4	0.7	0.0	10.5	14.4	5.0	4.8	14.6	0.9	0.4
Initial Q Delay(i3), 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/h	11.0	0.0	0.6	0.2	0.0	1.0	0.4	8.2	8.5	1.4	4.2	1.0
LnGrp Delay(d), s/veh	28.8	0.0	26.0	24.5	0.0	34.9	39.7	15.3	15.1	38.9	8.7	6.7
LnGrp LOS	C		C	C		C	D	B	B	D	A	A
Approach Vol, veh/h	100			68			1306			1097		
Approach Delay, s/veh	27.6			33.0			15.6			10.5		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2			7.6	5.5	31.9		7.0				
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.7			16.0	4.0	20.0		16.0				
Max Q Clear Time (g_c+10), s	16.4			3.7	2.6	10.4		3.7				
Green Ext Time (p_c), s	0.0	5.5		0.2	0.0	6.1		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay	14.3											
HCM 2010 LOS	B											

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	10	296	22	4	63	336	1000	29	72	503	220
Future Volume (veh/h)	84	10	296	22	4	63	336	1000	29	72	503	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	91	11	240	24	4	68	365	1087	32	78	547	239
Adj No. of Lanes	1	1	1	1	1	1	2	0	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	327	278	36	242	206	411	1891	56	101	874	381
Arrive On Green	0.07	0.18	0.18	0.02	0.13	0.13	0.23	0.54	0.06	0.36	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3511	103	1774	2401	1046
Grp Volume(v), veh/h	91	11	240	24	4	68	365	548	571	78	403	383
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1770	1678
Q Serve(g_s), s	4.4	0.4	12.7	1.2	0.2	3.4	17.2	17.9	17.9	3.7	16.2	16.3
Cycle Q Clear(c), s	4.4	0.4	12.7	1.2	0.2	3.4	17.2	17.9	17.9	3.7	16.2	16.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.06	1.00	0.62
Lane Grp Cap(c), veh/h	117	327	278	36	242	206	411	953	994	101	644	611
V/C Ratio(X)	0.78	0.03	0.86	0.67	0.02	0.33	0.89	0.57	0.57	0.77	0.63	0.63
Avail Cap(c_a), veh/h	195	462	393	84	345	293	586	953	994	206	644	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	29.5	34.6	42.0	32.7	34.1	32.1	13.3	13.3	40.2	22.6	22.6
Incr Delay (d2), s/veh	10.6	0.0	13.1	19.2	0.0	0.9	11.6	2.5	2.4	11.9	4.5	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln/2	5.0	0.2	6.6	0.8	0.1	15.0	9.7	9.3	9.7	2.2	8.6	8.5
LnGrp Delay(d),s/veh	50.3	29.5	47.6	61.2	32.8	35.0	43.7	15.8	15.7	52.0	27.2	27.3
LnGrp LOS	D	C	D	E	C	D	D	B	B	D	C	C
Approach Vol, veh/h		342			96			1484			864	
Approach Delay, s/veh		47.8			41.5			22.6			29.5	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s/4	51.0	6.3	19.7	24.5	35.9	10.2	15.7					
Change Period (Y+Rc), s/4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s/4.5	46.5	4.1	21.4	28.2	38.0	9.5	16.0					
Max Q Clear Time (q_c+Hb), s/4.5	18.9	3.2	14.7	19.2	18.3	6.4	5.4					
Green Ext Time (p_c), s	0.0	8.6	0.0	0.5	0.8	3.6	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	28.5											
HCM 2010 LOS	C											

Existing + Cuml Proj PM

14: I-15 NB Ramps & Auto Park Way/W 9th Ave

Harmony Grove Parcel

11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	179	1029	0	0	772	425	599	5	270	0	0	0
Future Volume (veh/h)	179	1029	0	0	772	425	599	5	270	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776			
Adj Flow Rate, veh/h	216	1118	0	0	919	452	637	0	314			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86			
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			
Cap, veh/h	304	2159	0	0	1680	750	836	0	373			
Arrive On Green	0.09	0.64	0.00	0.00	0.50	0.50	0.25	0.00	0.25			
Sat Flow, veh/h	3281	3463	0	0	3463	1507	3382	0	1509			
Grp Volume(v), veh/h	216	1118	0	0	919	452	637	0	314			
Grp Sat Flow(s), veh/h/ln	1687	0	0	0	1687	1507	1691	0	1509			
Q Serve(g_s), s	5.4	15.2	0.0	0.0	16.0	18.3	14.8	0.0	16.8			
Cycle Q Clear(g_c), s	5.4	15.2	0.0	0.0	16.0	18.3	14.8	0.0	16.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	304	2159	0	0	1680	750	836	0	373			
V/C Ratio(X)	0.71	0.52	0.00	0.00	0.55	0.60	0.76	0.00	0.84			
Avail Cap(c_a), veh/h	610	2159	0	0	1680	750	1011	0	451			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.79	0.79	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.5	8.2	0.0	0.0	14.7	15.3	29.7	0.0	30.4			
Incr Delay (d2), s/veh	2.4	0.7	0.0	0.0	0.4	1.4	2.8	0.0	11.6			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	6.2	7.2	0.0	0.0	7.5	7.8	7.2	0.0	8.2			
LnGrp Delay(d), s/veh	39.9	8.9	0.0	0.0	15.1	16.7	32.5	0.0	42.0			
LnGrp LOS	D	A			B	B	C		D			
Approach Vol, veh/h	1334				1371				951			
Approach Delay, s/veh	14.0				15.6				35.6			
Approach LOS	B				B				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6	8					
Phs Duration (G+Y+Rc), s		59.4			12.1	47.3	25.6					
Change Period (Y+Rc), s		5.0			*4.2	5.0	4.6					
Max Green Setting (Gmax), s		50.0			*16	30.0	25.4					
Max Q Clear Time (g_c+I), s		17.2			7.4	20.3	18.8					
Green Ext Time (p_c), s		10.2			0.4	5.5	2.2					
Intersection Summary												
HCM 2010 Ctrl Delay					20.2							
HCM 2010 LOS					C							
Notes												

HCM 2010 Signalized Intersection Summary
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Existing + Cuml Proj PM

15: Kauana Loa Dr & Country Club Dr

Harmony Grove Parcel

11/20/2017

Intersection						
Intersection Delay, s/veh						
Intersection LOS						
B						
Movement						
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	57	112	199	34	93	207
Future Vol, veh/h	57	112	199	34	93	207
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	122	216	37	101	225
Number of Lanes	1	0	1	0	0	1
Approach						
WB				SB		
Opposing Approach				SB		NB
Opposing Lanes	0		1		1	
Conflicting Approach Left NB					WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right SB				WB		
Conflicting Lanes Right	1		1		0	
HCM Control Delay	9.7		10.1		11.4	
HCM LOS	A		B		B	
Lane						
NBLn1	WBLn1	SBLn1				
Vol Left, %	0%	34%	31%			
Vol Thru, %	85%	0%	69%			
Vol Right, %	15%	66%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	233	169	300			
LT Vol	0	57	93			
Through Vol	199	0	207			
RT Vol	34	112	0			
Lane Flow Rate	253	184	326			
Geometry Grp	1	1	1			
Degree of Util (X)	0.33	0.251	0.43			
Departure Headway (Hd)	4.688	4.923	4.747			
Convergence, Y/N	Yes	Yes	Yes			
Cap	762	724	753			
Service Time	2.745	2.988	2.802			
HCM Lane V/C Ratio	0.332	0.254	0.433			
HCM Control Delay	10.1	9.7	11.4			
HCM Lane LOS	B	A	B			
HCM 95th-ile Q	1.4	1	2.2			
Intersection Summary						
HCM 2010 Ctrl Delay						
HCM 2010 LOS						
Notes						

HCM 2010 AWSC
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Existing + Cuml Proj PM

16: Harmony Grove Village Pkwy & Country Club Dr

Harmony Grove Parcel

11/20/2017

Intersection						
Intersection Delay, s/veh						
Intersection LOS						
B						
Movement						
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	190	181	300	13	23	162
Future Vol, veh/h	190	181	300	13	23	162
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	207	197	326	14	25	176
Number of Lanes	1	1	1	1	1	1
Approach						
EB				WB		SB
Opposing Approach	WB			EB		
Opposing Lanes	2		2			0
Conflicting Approach Left SB					WB	
Conflicting Lanes Left	2		0		2	
Conflicting Approach Right		SB			EB	
Conflicting Lanes Right	0		2		2	
HCM Control Delay	11.4		13.9		10.6	
HCM LOS	B		B		B	
Lane						
EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	181	300	13	23	162
LT Vol	190	0	0	0	23	0
Through Vol	0	181	300	0	0	0
RT Vol	0	0	0	13	0	162
Lane Flow Rate	207	197	326	14	25	176
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.347	0.303	0.512	0.019	0.048	0.28
Departure Headway (Hd)	6.051	5.545	5.647	4.94	6.934	5.72
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	595	649	639	725	517	629
Service Time	3.774	3.268	3.372	2.664	4.665	3.45
HCM Lane V/C Ratio	0.348	0.304	0.51	0.019	0.048	0.28
HCM Control Delay	12	10.7	14.2	7.8	10	10.7
HCM Lane LOS	B	B	B	A	A	B
HCM 95th-ile Q	1.5	1.3	2.9	0.1	0.2	1.1
Intersection Summary						
HCM 2010 Ctrl Delay						
HCM 2010 LOS						
Notes						

HCM 2010 AWSC
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Existing + Cuml Proj PM

17: Country Club Dr & Harmony Grove Rd

Harmony Grove Parcel

11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	570	10	25	290	10	5	10	20	10	20	177
Future Volume (veh/h)	184	570	10	25	290	10	5	10	20	10	20	177
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	200	620	11	27	315	11	5	11	22	11	22	192
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	597	11	40	419	712	50	109	219	399	37	325
Arrive On Green	0.13	0.33	0.33	0.02	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1825	32	1774	1863	1583	221	486	973	1774	165	1443
Grp Volume(v), veh/h	200	631	27	315	11	38	0	0	11	11	0	214
Grp Sat Flow(s), veh/h/ln	1774	0	1857	1774	1863	1583	1680	0	0	1774	0	1608
Q Serve(g_s), s	8.9	0.0	26.2	1.2	12.6	0.3	1.4	0.0	0.4	0.0	9.5	0.0
Cycle Q Clear(g_c), s	8.9	0.0	26.2	1.2	12.6	0.3	1.4	0.0	0.4	0.0	9.5	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.13		0.58	1.00		0.90
Lane Grp Cap(c), veh/h	222	0	608	40	419	712	378	0	0	399	0	362
V/C Ratio(X)	0.90	0.00	1.04	0.67	0.75	0.02	0.10	0.00	0.00	0.03	0.00	0.59
Avail Cap(c_a), veh/h	222	0	608	89	419	712	378	0	0	399	0	362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	26.9	38.8	28.9	12.2	24.6	0.0	0.0	24.2	0.0	27.7
Incr Delay (d2), s/veh	35.2	0.0	46.6	17.9	11.8	0.0	0.5	0.0	0.0	0.1	0.0	6.9
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	6.5	0.0	21.2	0.8	7.8	0.2	0.7	0.0	0.0	0.2	0.0	4.9
LnGrp Delay(d), s/veh	69.7	0.0	73.5	56.8	40.7	12.2	25.1	0.0	0.0	24.3	0.0	34.7
LnGrp LOS	E		F	E	D	B	C			C		C
Approach Vol, veh/h	831			353			38			225		
Approach Delay, s/veh	72.6			41.0			25.1			34.1		
Approach LOS	E			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	30.2	30.2		22.0	14.0	22.0		22.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	24.0	18.0		10.0	10.0	18.0		18.0				
Max Q Clear Time (g_c), s	13.3	28.2		11.0	10.9	14.6		3.4				
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.6		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	57.7											
HCM 2010 LOS	E											

Existing + Cuml Proj PM
18: Harmony Grove Rd & Kauana Loa Dr

Harmony Grove Parcel
11/20/2017

Intersection						
Int Delay, s/veh	19.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	79	40	355	152	30	610
Future Vol, veh/h	79	40	355	152	30	610
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	43	386	165	33	663
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	129	0	1045	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	937	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1457	-	253	946
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1457	-	179	946
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	381	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	5.9		33.3		
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	788	-	-	1457	-	
HCM Lane V/C Ratio	0.883	-	-	0.265	-	
HCM Control Delay (s)	33.3	-	-	8.4	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	11.4	-	-	1.1	-	

HCM 2010 TWSC
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Synchro 8 Report
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Existing + Cuml Proj + Project AM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel
02/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	513	10	270	642	580	0	0	616	370
Future Volume (veh/h)	0	0	0	513	10	270	642	580	0	0	616	370
Number				3	8	18	5	2	12	1	6	10
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863
Adj Flow Rate, veh/h				654	0	199	698	630	0	0	670	402
Adj No. of Lanes				2	0	1	2	2	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				801	0	357	1178	2344	0	0	1343	418
Arrive On Green				0.23	0.00	0.23	0.11	0.22	0.00	0.00	0.26	0.26
Sat Flow, veh/h				3548	0	1583	3442	3632	0	0	5253	1583
Grp Volume(v), veh/h				654	0	199	698	630	0	0	670	402
Grp Sat Flow(s), veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583
Q Serve(g _s), s				17.5	0.0	11.1	19.3	14.8	0.0	0.0	11.2	25.0
Cycle Q Clear(g _c), s				17.5	0.0	11.1	19.3	14.8	0.0	0.0	11.2	25.0
Prop In Lane				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Lane Grp Cap(c), veh/h				801	0	357	1178	2344	0	0	1343	418
V/C Ratio(X)				0.82	0.00	0.56	0.59	0.27	0.00	0.00	0.50	0.96
Avail Cap(c _a), veh/h				1327	0	592	1178	2344	0	0	1343	418
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.59	0.59	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				36.7	0.0	34.3	37.7	19.0	0.0	0.0	31.2	36.3
Incr Delay (d2), s/veh				2.1	0.0	1.4	0.5	0.2	0.0	0.0	1.3	35.4
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h/ln				8.8	0.0	5.0	9.3	7.3	0.0	0.0	5.4	15.1
LnGrp Delay(d), s/veh				38.9	0.0	35.6	38.2	19.1	0.0	0.0	32.5	71.7
LnGrp LOS				D		D	D	B			C	E
Approach Vol, veh/h					853				1328			
Approach Delay, s/veh					38.1				29.2			
Approach LOS					D				C			
									D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2				5		6		8			
Phs Duration (G+Y+Rc), s	71.8				39.8		32.0		28.2			
Change Period (Y+Rc), s	5.6				5.6		* 5.6		5.6			
Max Green Setting (Gmax), s	51.4				19.8		* 26		37.4			
Max Q Clear Time (g _c +H1), s	16.8				21.3		27.0		19.5			
Green Ext Time (p _c), s	4.9				0.0		0.0		3.1			
Intersection Summary												
HCM 2010 Ctrl Delay				37.5								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj PM
19: Harmony Grove Rd & Harmony Grove Village Pkwy

Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	91	4	166	160	107	1	493	377	25	199	132
Future Volume (veh/h)	90	91	4	166	160	107	1	493	377	25	199	132
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	99	4	180	174	116	1	536	410	27	216	143
Adj No. of Lanes	1	1	0	1	1	1	0	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	265	11	226	214	143	2	840	714	41	881	749
Arrive On Green	0.07	0.15	0.15	0.13	0.20	0.20	0.00	0.45	0.45	0.02	0.47	0.47
Sat Flow, veh/h	1774	1778	72	1774	1044	696	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	98	0	103	180	0	290	1	536	410	27	216	143
Grp Sat Flow(s), veh/h/ln	1774	0	1850	1774	0	1740	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.9	0.0	3.6	7.1	0.0	11.5	0.0	16.0	13.8	1.1	5.0	3.8
Cycle Q Clear(g_c), s	3.9	0.0	3.6	7.1	0.0	11.5	0.0	16.0	13.8	1.1	5.0	3.8
Prop In Lane	1.00		0.04	1.00		0.40	1.00		1.00	1.00	1.00	1.00
Grp Prp Cap(c_p), veh/h	127	0	275	226	0	356	2	840	714	41	881	749
1/C Ratio(C)	0.77	0.00	0.37	0.80	0.00	0.81	0.41	0.64	0.57	0.66	0.25	0.19
Avail Cap(c_a), veh/h	261	0	411	480	0	601	98	840	714	98	881	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Unp Delay Filter(f)	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	0	27.6	30.5	0	27.3	36.0	15.3	14.7	34.9	11.3	11.0
Incrr Delay (d2), s/veh	9.6	0	0.8	6.3	0	4.5	82.6	3.7	3.3	16.4	0.7	0.6
Initial 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
% Late BackOfQ(50%),veh/ln	4.2	0.0	1.9	3.9	0.0	5.9	0.1	9.1	6.7	0.7	2.7	1.7
LnGrp Delay (d4), s/veh	22.5	0.0	28.5	36.8	0	31.9	118.6	19.0	18.0	51.3	12.0	11.6
LnGrp LOS	D		C	D		C	F	B	B	D	B	B
Approach Vol, veh/h		201			470			947			386	
Approach Delay, s/veh		35.3			33.8			18.7			14.6	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	37.0	13.7	15.2	4.6	38.6	9.6	19.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (G_max), s	4.0	32.5	19.5	16.0	4.0	32.5	10.6	24.9				
Max Q Clear Time (q_c+M1), s	3.1	18.0	9.1	5.6	2.0	7.0	5.9	13.5				
Green Ext Time (p_c), s	0.0	4.5	0.3	0.3	0.0	1.7	0.1	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			23.1									
HCM 2010 LOS			C									

Existing + Cuml Proj + Project AM
3: Auto Park Way/Nordahl Rd & E Mission Rd

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	420	213	104	640	245	450	863	58	404	900	290
Future Volume (veh/h)	340	420	213	104	640	245	450	863	58	404	900	290
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	370	457	232	113	696	0	489	938	63	439	978	315
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1015	454	172	838	375	528	1695	528	447	1181	380
Arrive On Green	0.10	0.29	0.29	0.05	0.24	0.00	0.15	0.33	0.33	0.04	0.10	0.10
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	3811	1226
Grp Volume(v), veh/h	370	457	232	113	696	0	489	938	63	439	978	423
Grp Sat Flow(s), veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1646
Q Serve(g_s), s	10.0	10.6	7.9	3.2	18.7	0.0	14.0	15.1	2.8	12.7	25.2	25.2
Cycle Q Clear(g_c), s	10.0	10.6	7.9	3.2	18.7	0.0	14.0	15.1	2.8	12.7	25.2	25.2
Prop In Lane	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.74
Lane Grp Cap(c), veh/h	344	1015	454	172	838	375	528	1695	528	447	1051	510
V/C Ratio(X)	1.08	0.45	0.51	0.66	0.83	0.00	0.93	0.55	0.12	0.98	0.83	0.83
Avail Cap(c_a), veh/h	344	1168	523	172	1026	459	528	1695	528	447	1051	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74
Uniform Delay (d), s/veh	45.0	29.2	12.4	46.7	36.3	0.0	41.8	27.3	23.1	47.7	42.3	42.3
Incr Delay (d2), s/veh	70.0	0.3	0.9	8.8	4.9	0.0	22.7	1.3	0.5	31.9	5.7	11.1
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	5.2	3.5	1.7	9.7	0.0	0.0	8.3	7.2	1.3	8.1	12.7	13.1
LnGrp Delay(d), s/veh	115.0	29.5	13.3	55.4	41.2	0.0	64.5	28.6	23.6	79.6	48.0	53.4
LnGrp LOS	F	C	B	E	D		E	C	C	E	D	D
Approach Vol, veh/h	1059			809			1490			1732		
Approach Delay, s/veh	55.8			43.2			40.1			57.3		
Approach LOS	E			D			D			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	38.3	10.0	33.7	20.3	36.0	15.0	28.7					
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
Max Green Setting (Gmax), s	29.0	5.0	33.0	11.0	31.0	10.0	29.0					
Max Q Clear Time (g_c+H), s	17.1	5.2	12.6	16.0	27.2	12.0	20.7					
Green Ext Time (p_c), s	0.0	5.3	0.0	3.8	0.0	2.7	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay	49.7											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj + Project AM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	396	5	56	5	5	5	183	855	5	70	1042	235
Future Volume (veh/h)	396	5	56	5	5	5	183	855	5	70	1042	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	430	5	61	5	5	5	199	929	5	76	1133	255
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	525	600	510	506	276	276	217	1766	10	98	1214	271
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.12	0.49	0.49	0.49	0.06	0.42	0.42
Sat Flow, veh/h	1399	1863	1583	1330	856	856	1774	3609	19	1774	2876	643
Grp Volume(v), veh/h	430	5	61	5	0	10	199	455	479	76	694	694
Grp Sat Flow(s), veh/h/ln	1399	1863	1583	1330	0	1712	1774	1770	1859	1774	1770	1749
Q Serve(g, s), s	27.2	0.2	2.4	0.2	0.0	0.4	10.0	15.9	15.9	3.8	33.6	34.2
Cycle Q Clear(g, c), s	27.6	0.2	2.4	0.4	0.0	0.4	10.0	15.9	15.9	3.8	33.6	34.2
Prop In Lane	1.00	1.00	1.00		0.50	1.00		1.00	1.00	0.01	1.00	0.37
Lane Grp Cap(c), veh/h	525	600	510	506	0	552	217	866	910	98	747	739
V/C Ratio(X)	0.82	0.01	0.12	0.01	0.00	0.02	0.92	0.53	0.53	0.78	0.93	0.94
Avail Cap(c, a), veh/h	525	600	510	506	0	552	217	866	910	177	747	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	20.7	21.5	20.9	0.0	20.8	39.1	15.8	15.8	42.0	24.7	24.9
Incr Delay (d2), s/veh	9.9	0.0	0.1	0.0	0.0	0.0	39.2	2.3	2.2	12.3	19.6	21.2
Initial Q Delay(i3), 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	2.0	0.1	1.1	0.1	0.0	0.2	7.2	8.3	8.7	2.2	20.3	20.7
LnGrp Delay(d), s/veh	40.1	20.7	21.6	20.9	0.0	20.8	78.2	18.1	18.0	54.2	44.3	46.1
LnGrp LOS	D	C	C	C		C	E	B	B	D	D	D
Approach Vol, veh/h	496			15			1133			1464		
Approach Delay, s/veh	37.6			20.8			28.6			45.7		
Approach LOS	D			C			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4	5	6	8						
Phs Duration (G+Y+Rc), s	48.0		33.0	15.0	42.0	33.0						
Change Period (Y+Rc), s	4.0		4.0		4.0	4.0						
Max Green Setting (Gmax), s	40.0		29.0	11.0	38.0	29.0						
Max Q Clear Time (g, c+H), s	17.9		23.6	12.0	36.2	2.4						
Green Ext Time (p, c), s	0.0	6.3	0.0	0.0	1.4	0.0						
Intersection Summary												
HCM 2010 Ctrl Delay	38.0											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj + Project AM
5: Harmony Grove Rd & Enterprise St

Harmony Grove Parcel
02/09/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	184	144	270	401	216	237
Future Volume (veh/h)	184	144	270	401	216	237
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	200	157	293	436	235	258
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	303	257	366	852	647	904
Arrive On Green	0.16	0.16	0.21	0.46	0.36	0.36
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583
Grp Volume(v), veh/h	200	157	293	436	235	258
Grp Sat Flow(s), veh/h/ln	1863	1583	1774	1863	1774	1583

Existing+Project+Cumulative Projects AM
7: I-15 NB Ramps & Valley PkwyHarmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	452	964	0	0	974	201	454	3	470	0	0	0
Future Volume (veh/h)	452	964	0	0	974	201	454	3	470	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	491	1049	0	0	1059	218	493	3	511			
Adj No. of Lanes	2	3	0	0	3	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	568	2640	0	0	1597	496	679	4	606			
Arrive On Green	0.17	0.52	0.00	0.00	0.31	0.31	0.38	0.38	0.38			
Sat Flow, veh/h	3442	5253	0	0	5253	1579	1764	11	1576			
Grp Volume(v), veh/h	491	1048	0	0	1059	218	496	0	511			
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1579	1775	0	1576			
Q Serve(g_s), s	14.6	13.1	0.0	0.0	18.9	11.5	25.1	0.0	31.0			
Cycle Q Clear(g_c), s	14.6	13.1	0.0	0.0	18.9	11.5	25.1	0.0	31.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	568	2640	0	0	1597	496	683	0	606			
V/C Ratio(X)	0.86	0.40	0.00	0.00	0.66	0.44	0.73	0.00	0.84			
Avail Cap(c_a), veh/h	682	2640	0	0	1597	496	683	0	606			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(f)	0.75	0.75	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.7	15.3	0.0	0.0	31.2	28.7	27.6	0.0	29.4			
Incr Delay (d2), s/veh	7.6	0.3	0.0	0.0	2.2	2.8	6.6	0.0	13.4			
Initial Q Delay(Qs), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	7.6	6.2	0.0	0.0	9.1	5.4	13.5	0.0	15.7			
LnGrp Delay(d), s/veh	50.2	15.6	0.0	0.0	33.4	31.5	34.2	0.0	42.8			
LnGrp LOS	D	B			C	C	C		D			
Approach Vol, veh/h	1539				1277			1007				
Approach Delay, s/veh	26.7				33.1			38.6				
Approach LOS	C				C			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2				5	6		8				
Phs Duration (G+Y+Rc), s	60.0				21.5	38.5		45.0				
Change Period (Y+Rc), s	5.5				* 4.2	5.5		4.6				
Max Green Setting (Gmax), s	54.5				* 21	29.5		40.4				
Max Q Clear Time (g_c+1), s	15.1				16.6	20.9		33.0				
Green Ext Time (p_c), s	8.2				0.7	4.6		3.2				
Intersection Summary												
HCM 2010 Ctrl Delay					31.9							
HCM 2010 LOS					C							
Notes												

HCM 2010 Signalized Intersection Summary
N:\2314\Analysis\Intersections\HCM 2010\Existing+Project+Cuml AM_I-15 Valley Pkwy.synSynchro 7 - Report
Page 1Existing+Project+Cumulative Projects AM
8: Shopping Ctr Dwyl-I-15 SB Ramps & Valley PkwyHarmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	893	93	200	958	270	71	80	170	353	120	652
Future Volume (veh/h)	111	893	93	200	958	270	71	80	170	353	120	652
Number	5	2	12	1	6	16	3	8	18	7	4	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		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	121	971	101	217	1080	267	77	87	185	384	130	709
Adj No. of Lanes	2	3	1	2	4	1	1	1	1	1	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	1179	366	284	1949	412	217	228	321	562	190	664
Arrive On Green	0.05	0.23	0.23	0.08	0.26	0.26	0.12	0.12	0.12	0.42	0.42	0.42
Sat Flow, veh/h	3442	5085	1579	3548	7451	1574	1774	1863	1583	1342	454	1583
Grp Volume(v), veh/h	121	971	101	217	1080	267	77	87	185	514	0	709
Grp Sat Flow(s), veh/h/ln	1721	1695	1579	1774	1863	1574	1774	1863	1583	1796	0	1583
Q Serve(g_s), s	4.3	22.7	6.6	7.5	15.6	18.9	5.0	5.4	13.2	29.1	0.0	52.4
Cycle Q Clear(g_c), s	4.3	22.7	6.6	7.5	15.6	18.9	5.0	5.4	13.2	29.1	0.0	52.4
Prop In Lane	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00		1.00
Lane Grp Cap(c), veh/h	173	1179	366	284	1949	412	217	228	321	753	0	664
V/C Ratio(X)	0.70	0.82	0.28	0.76	0.55	0.65	0.35	0.38	0.58	0.68	0.00	1.07
Avail Cap(c_a), veh/h	242	1179	366	335	1949	412	227	238	329	753	0	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	0.65	0.65	0.65	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	45.6	39.4	56.4	39.9	41.0	50.3	50.5	45.0	29.5	0.0	36.3
Incr Delay (d2), s/veh	5.0	6.6	1.9	5.7	2.3	1.0	1.0	2.4	2.5	0.0	0.0	54.5
Initial Q Delay(Qs), 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	2.2	11.3	3.1	3.9	8.1	8.5	2.5	2.8	6.0	15.0	0.0	32.9
LnGrp Delay(d), s/veh	63.4	52.1	41.2	62.1	40.1	43.4	51.3	51.5	47.4	32.1	0.0	90.9
LnGrp LOS	E	D	D	E	D	D	D	D	D	C		F
Approach Vol, veh/h	1193			1564				349		1223		
Approach Delay, s/veh	52.4			43.7				49.3		66.2		
Approach LOS	D			D				D		E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	34.5		57.0	10.5	38.2		19.3				
Change Period (Y+Rc), s	* 4.2	5.5		4.6	* 4.2	5.5		4.0				
Max Green Setting (Gmax), s	* 12	26.5		52.4	* 8.8	29.5		16.0				
Max Q Clear Time (g_c+1), s	9.5	24.7		54.4	6.3	20.9		15.2				
Green Ext Time (p_c), s	0.2	1.1		0.0	0.1	4.9		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay					52.9							
HCM 2010 LOS					D							
Notes												

HCM 2010 Signalized Intersection Summary
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Page 3Existing + Cuml Proj + Project AM
9: W Valley Pkwy & Auto Park WayHarmony Grove Parcel
02/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	445	430	100	732	40	300	764	50	150	938	564
Future Volume (veh/h)	210	445	430	100	732	40	300	764	50	150	938	564
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	228	484	467	109	796	43	326	830	54	163	1020	613
Adj No. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	627	561	171	1062	57	380	1627	507	228	1346	567
Arrive On Green	0.09	0.35	0.35	0.05	0.31	0.31	0.11	0.32	0.32	0.07	0.26	0.26
Sat Flow, veh/h	3442	1770	1583	3442	3415	184	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	228	484	467	109	412	427	326	830	54	163	1020	613
Grp Sat Flow(s), veh/h/ln	1721	1770	1583	1721	1770	1830	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	5.8	22.0	24.5	2.8	19.0	19.0	8.4	12.0	2.2	4.2	16.7	24.0
Cycle Q Clear(c), s	5.8	22.0	24.5	2.8	19.0	19.0	8.4	12.0	2.2	4.2	16.7	24.0
Upstream Lane	1.00	1.00	1.00	1.00	1.00	0.10	1.00	1.00	1.00	1.00	1.00	1.00
Vic Grp Cap(c), veh/h	322	627	561	171	575	569	380	1627	507	228	1346	567
LANE Ratio(r)	0.71	0.77	0.83	0.64	0.75	0.75	0.86	0.51	0.11	0.72	0.76	1.08
Avail Cap(c_a), veh/h	911	800	716	190	550	569	380	1627	507	228	1346	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	26.0	26.8	42.3	28.1	28.1	39.6	25.0	21.7	41.5	30.6	29.1
Incr Delay (d2), s/veh	2.9	3.6	6.6	5.9	5.7	5.5	17.6	1.1	0.4	10.2	4.0	61.5
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	2.9	11.4	11.7	1.5	10.1	10.5	5.0	5.8	1.0	2.3	8.3	23.7
%ile BackOfQ(95%),veh/ln	42.8	29.6	33.4	48.2	33.7	33.6	57.2	26.2	22.1	51.7	34.7	90.6
LnGrp LOS	D	C	C	D	C	D	E	C	C	D	C	F
Approach Vol, veh/h		1179			948			1210				1796
Approach Delay, s/veh		33.6			35.3			34.4				55.3
Approach LOS		C			D			C				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	34.0	9.5	37.1	15.0	29.0	13.5	33.2				
Change Period (Y+Rc), s	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	6.0	29.0	5.0	41.0	10.0	24.0	24.0	22.0				
Max Q Clear Time (q_c+H1), s	6.2	14.0	4.8	26.5	10.4	26.0	7.8	21.0				
Green Ext Time (p_c), s	0.0	5.3	0.0	5.7	0.0	0.0	0.7	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				41.7								
HCM 2010 LOS				D								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	21	27	16	47	75	22	791	7	28	1130	52
Future Volume (veh/h)	89	21	27	16	47	75	22	791	7	28	1130	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	97	23	29	17	51	82	24	860	8	30	1228	57
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	64	81	193	70	113	39	1647	15	47	1638	733
Arrive On Green	0.09	0.09	0.09	0.11	0.11	0.11	0.02	0.46	0.46	0.03	0.46	0.46
Sat Flow, veh/h	1774	750	946	1774	644	1036	1774	3593	33	1774	3539	1583
Grp Volume(v), veh/h	97	0	52	17	0	133	24	424	444	30	1228	57
Grp Sat Flow(s), veh/h/ln	1774	0	1696	1774	0	1680	1774	1770	1857	1774	1770	1583
Q Serve(g_s), s	3.0	0.0	1.6	0.5	0.0	4.3	0.8	9.6	9.6	0.9	16.0	1.1
Cycle Q Clear(g_c), s	3.0	0.0	1.6	0.5	0.0	4.3	0.8	9.6	9.6	0.9	16.0	1.1
Prop In Lane	1.00		0.56	1.00		0.62	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	152	0	145	193	0	183	39	811	851	47	1638	733
V/C Ratio(X)	0.64	0.00	0.36	0.09	0.00	0.73	0.61	0.52	0.52	0.64	0.75	0.08
Avail Cap(c_a), veh/h	505	0	483	505	0	478	126	811	851	174	1638	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	24.2	22.5	0.0	24.2	27.2	10.8	10.8	27.1	12.4	8.4
Incr Delay (d2), s/veh	4.4	0.0	1.5	0.2	0.0	5.4	14.2	2.4	2.3	13.3	3.2	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/h	6.0	0.0	0.8	0.2	0.0	2.3	0.5	5.1	5.4	0.6	8.4	0.5
LnGrp Delay(d), s/veh	29.3	0.0	25.7	22.7	0.0	29.6	41.4	13.2	13.1	40.3	15.6	8.6
LnGrp LOS	C		C	C		C	D	B	B	D	B	A
Approach Vol, veh/h	149					150			892			1315
Approach Delay, s/veh	28.0					28.8			15.9			49.0
Approach LOS	C					C			B			D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.3			9.3	5.7	30.5		10.6				
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	34.5			16.0	4.0	26.0		16.0				
Max Q Clear Time (g_c+1), s	11.6			5.0	2.8	18.0		6.3				
Green Ext Time (p_c), s	0.0	4.6		0.4	0.0	5.1		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay						16.7						
HCM 2010 LOS						B						

HCM 2010 Signalized Intersection Summary
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	585	672	127	1221	0	0	0	0	163	7	77
Future Volume (veh/h)	0	585	672	127	1221	0	0	0	0	163	7	77
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	750	715	184	1420	0				218	0	101
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.78	0.94	0.69	0.86	0.92				0.78	0.58	0.76
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	2051	900	223	2663	0				330	0	147
Arrive On Green	0.00	0.61	0.61	0.13	0.79	0.00				0.10	0.00	0.10
Sat Flow, veh/h	0	3463	1481	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	750	715	184	1420	0				218	0	101
Grp Sat Flow(s), veh/h/ln	0	1687	1481	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	9.5	31.1	9.0	13.0	0.0				5.3	0.0	5.5
Cycle Q Clear(g_c), s	0.0	9.5	31.1	9.0	13.0	0.0				5.3	0.0	5.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2051	900	223	2663	0				330	0	147
V/C Ratio(X)	0.00	0.37	0.79	0.82	0.53	0.00				0.66	0.00	0.68
Avail Cap(c_a), veh/h	0	2051	900	314	2663	0				716	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(f)	0.00	1.00	1.00	0.73	0.73	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.4	12.6	35.9	3.3	0.0				37.0	0.0	37.1
Incr Delay (d2), s/veh	0.0	0.5	7.2	8.7	0.6	0.0				2.2	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0.0	4.5	14.3	4.7	6.1	0.0				2.6	0.0	2.5
LnGrp Delay(d), s/veh	0.0	8.9	19.8	44.7	3.8	0.0				39.2	0.0	42.6
LnGrp LOS		A	B	D	A					D		D
Approach Vol, veh/h		1465			1604					319		
Approach Delay, s/veh		14.2			8.5					4.0		
Approach LOS		B			A					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	56.7			12.9		72.1						
Change Period (Y+Rc), s	4.2			5.0		4.6						
Max Green Setting (Gmax), s	37.4			18.0		57.4						
Max Q Clear Time (g_c+1), s	33.1			7.5		15.0						
Green Ext Time (p_c), s	0.2	2.9		0.8		15.8						
Intersection Summary												
HCM 2010 Ctrl Delay						14.0						
HCM 2010 LOS						B						
Notes												

HCM 2010 Signalized Intersection Summary
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	10	429	90	12	52	343	317	43	138	1037	52
Future Volume (veh/h)	141	10	429	90	12	52	343	317	43	138	1037	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	153	11	249	98	13	57	373	345	47	150	1127	57
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	336	286	101	246	209	393	1484	201	184	1218	62
Arrive On Green	0.11	0.18	0.18	0.06	0.13	0.13	0.22	0.47	0.47	0.10	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3134	424	1774	3428	173
Grp Volume(v), veh/h	153	11	249	98	13	57	373	194	198	150	581	603
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1832
Q Serve(g_s), s	8.2	0.5	14.8	5.3	0.6	3.1	20.1	6.3	6.4	8.0	30.6	3.0
Cycle Q Clear(g_c), s	8.2	0.5	14.8	5.3	0.6	3.1	20.1	6.3	6.4	8.0	30.6	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.09
Lane Grp Cap(c), veh/h	187	336	286	101	246	209	393	838	847	184	629	651
V/C Ratio(X)	0.82	0.03	0.87	0.97	0.05	0.27	0.95	0.23	0.23	0.82	0.92	0.93
Avail Cap(c_a), veh/h	313	567	482	101	344	292	393	838	847	320	648	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	32.8	38.6	45.6	36.8	37.9	37.2	15.1	15.1	42.5	30.0	30.0
Incr Delay (d2), s/veh	8.5	0.0	9.0	80.9	0.1	0.7	32.2	0.1	0.1	8.5	18.9	18.5
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/h	4.0	0.2	7.2	4.9	0.3	1.4	13.4	3.1	3.2	4.4	18.2	18.8
LnGrp Delay(d), s/veh	51.0	32.8	47.6	126.6	36.9	38.6	69.4	15.2	15.3	51.0	48.9	48.6
LnGrp LOS	D	C	D	F	D	D	E	B	B	D	D	D
Approach Vol, veh/h	413				168			765		1334		
Approach Delay, s/veh	48.5				89.8			41.6		49.0		
Approach LOS	D				F			D		D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	34.5	50.4	10.0	22.0	26.0	38.9	14.7	17.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	39.5	5.5	29.5	21.5	35.5	10.2	17.1	17.9				
Max Q Clear Time (g_c+M), s	8.4	7.3	16.8	22.1	32.6	10.2	5.1					
Green Ext Time (p_c), s	0.2	2.1	0.0	0.7	0.0	1.8	0.2	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	49.4											
HCM 2010 LOS	D											

Existing + Cuml Proj + Project AM
15: Kauana Loa Dr & Country Club Dr

Harmony Grove Parcel
02/09/2018

Intersection						
Intersection Delay, s/veh10.7						
Intersection LOS B						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	22	99	279	60	88	177
Future Vol, veh/h	22	99	279	60	88	177
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	108	303	65	96	192
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left NB					WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right SB			WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay	9.1		11.3		10.6	
HCM LOS	A		B		B	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	18%	33%			
Vol Thru, %	82%	0%	67%			
Vol Right, %	18%	82%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	339	121	265			
LT Vol	0	22	88			
Through Vol	279	0	177			
RT Vol	60	99	0			
Lane Flow Rate	368	132	288			
Geometry Grp	1	1	1			
Degree of Util (X)	0.459	0.18	0.378			
Departure Headway (Hd)	4.484	4.928	4.726			
Convergence, Y/N	Yes	Yes	Yes			
Cap	800	723	758			
Service Time	2.526	2.99	2.774			
HCM Lane V/C Ratio	0.46	0.183	0.38			
HCM Control Delay	11.3	9.1	10.6			
HCM Lane LOS	B	A	B			
HCM 95th-ile Q	2.4	0.7	1.8			

HCM 2010 AWSC
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Existing + Cuml Proj + Project AM
16: Harmony Grove Village Pkwy & Country Club Dr

Harmony Grove Parcel
02/09/2018

Intersection						
Intersection Delay, s/veh11.8						
Intersection LOS B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	211	235	182	55	7	218
Future Vol, veh/h	211	235	182	55	7	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	229	255	198	60	8	237
Number of Lanes	1	1	1	1	1	1
Approach	EB		WB		SB	
Opposing Approach	WB		EB			
Opposing Lanes	2		2		0	
Conflicting Approach Left SB					WB	
Conflicting Lanes Left	2		0		2	
Conflicting Approach Right			SB		EB	
Conflicting Lanes Right	0		2		2	
HCM Control Delay	12.3		10.8		11.7	
HCM LOS	B		B		B	
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	235	182	55	7	218
LT Vol	211	0	0	0	7	0
Through Vol	0	235	182	0	0	0
RT Vol	0	0	0	55	0	218
Lane Flow Rate	229	255	198	60	8	237
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.389	0.398	0.325	0.086	0.015	0.375
Departure Headway (Hd)	6.11	5.604	5.906	5.197	6.905	5.692
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	589	644	609	689	519	633
Service Time	3.837	3.332	3.639	2.93	4.639	3.425
HCM Lane V/C Ratio	0.389	0.396	0.325	0.087	0.015	0.374
HCM Control Delay	12.7	12	11.5	8.4	9.7	11.8
HCM Lane LOS	B	B	B	A	A	B
HCM 95th-ile Q	1.8	1.9	1.4	0.3	0	1.7

HCM 2010 AWSC
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Synchro 8 Report
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Existing + Cuml Proj + Project AM
17: Country Club Dr & Harmony Grove Rd

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	115	260	19	85	431	5	31	70	201	5	34	201
Future Volume (veh/h)	115	260	19	85	431	5	31	70	201	5	34	201
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/hln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	125	283	21	92	468	5	34	76	218	5	37	218
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	496	36	118	512	792	39	87	248	399	53	311
Arrive On Green	0.08	0.28	0.28	0.07	0.28	0.28	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1713	127	1774	1863	1583	172	385	1103	1774	235	1384
Grp Volume(v), veh/h	125	0	304	92	468	5	328	0	0	5	0	255
Grp Sat Flow(s), veh/hln1774	0	1840	1774	1863	1583	1660	0	0	1774	0	0	1619
Q Serve(g, s), s	5.6	0.0	11.3	4.1	19.5	0.1	15.3	0.0	0.0	0.2	0.0	11.6
Cycle Q Clear(g, c), s	5.6	0.0	11.3	4.1	19.5	0.1	15.3	0.0	0.0	0.2	0.0	11.6
Prop In Lane	1.00		0.07	1.00		1.00	0.10		0.66	1.00		0.85
Lane Grp Cap(c), veh/h	133	0	522	118	512	792	373	0	0	399	0	364
V/C Ratio(X)	0.94	0.00	0.58	0.78	0.91	0.01	0.88	0.00	0.00	0.01	0.00	0.70
Avail Cap(c, a), veh/h	133	0	522	155	512	792	373	0	0	399	0	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh36.8	0.0	24.6	36.8	28.1	10.0	29.9	0.0	0.0	24.1	0.0	28.5	0.0
Incr Delay (d2), s/veh	59.6	0.0	4.7	16.8	23.3	0.0	24.2	0.0	0.0	0.1	0.0	10.7
Initial Q Delay(Q3), 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/h4.9	0.0	6.4	2.5	13.3	0.1	9.5	0.0	0.0	0.1	0.0	6.3	0.0
LnGrp Delay(d), s/veh	96.4	0.0	29.3	53.6	51.3	10.0	54.1	0.0	0.0	24.2	0.0	39.2
LnGrp LOS	F		C	D	D	B	D			C		D
Approach Vol, veh/h	429			565			328			260		
Approach Delay, s/veh	48.8			51.3			54.1			38.9		
Approach LOS	D			D			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s9.3	26.7			22.0	10.0	26.0		22.0				
Change Period (Y+Rc), s4.0	4.0			4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s21.0	18.0			6.0	6.0	22.0		18.0				
Max Q Clear Time (g, c+1), s13.3	13.3			13.6	7.6	21.5		17.3				
Green Ext Time (p, c), s0.0	1.0			0.6	0.0	0.2		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay	49.2											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj + Project AM
18: Harmony Grove Rd & Kauana Loa Dr

Harmony Grove Parcel
02/09/2018

Intersection						
Int Delay, s/veh						
22.2						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	135	23	529	94	37	368
Future Vol, veh/h	135	23	529	94	37	368
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	-	-
Storage Length	-	-	-	-	-	-
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	147	25	575	102	40	400
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	172	0	1412	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	1252	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1405	-	152	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	269	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1405	-	86	885
Mov Cap-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	269	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		7.9		53	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	479	-	-	1405	-	
HCM Lane V/C Ratio	0.919	-	-	0.409	-	
HCM Control Delay (s)	53	-	-	9.3	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %ile Q(veh)	10.7	-	-	2	-	

HCM 2010 TWSC
N:\2314\Analysis\Intersections\HCM 2010\Existing + Cuml + Proj AM.syn

Synchro 8 Report
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Existing + Cuml Proj + Project AM
19: Harmony Grove Rd & Harmony Grove Village Pkwy

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	124	1	347	77	44	2	280	247	11	390	143
Future Volume (veh/h)	102	124	1	347	77	44	2	280	247	11	390	143
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	111	135	1	377	84	48	2	304	268	12	424	155
Adj No. of Lanes	1	1	0	1	0	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	192	1	431	297	170	4	721	613	21	739	628
Arrive On Green	0.08	0.10	0.10	0.24	0.27	0.27	0.00	0.39	0.39	0.01	0.40	0.40
Sat Flow, veh/h	1774	1847	14	1774	1114	637	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	111	0	136	377	0	132	2	304	268	12	424	155
Grp Sat Flow(s), veh/h/ln	1774	0	1860	1774	0	1750	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	4.4	0.0	5.0	14.5	0.0	4.2	0.1	8.5	8.9	0.5	12.6	4.6
Cycle Q Clear(g_c), s	4.4	0.0	5.0	14.5	0.0	4.2	0.1	8.5	8.9	0.5	12.6	4.6
Prop In Lane	1.00		0.01	1.00		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	144	0	194	431	0	467	4	721	613	21	739	628
V/C Ratio(X)	0.77	0.00	0.70	0.87	0.00	0.28	0.52	0.42	0.44	0.57	0.57	0.25
Avail Cap(c_a), veh/h	305	0	419	612	0	698	100	721	613	100	739	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	30.7	25.8	0.0	20.7	35.4	15.9	16.0	34.9	16.7	14.3
Incr Delay (d2), s/veh	8.5	0.0	4.6	9.8	0.0	0.3	79.1	1.8	2.3	22.0	3.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	2.5	0.0	2.8	8.3	0.0	2.1	0.1	4.7	4.2	0.4	7.1	2.2
LnGrp Delay(d), s/veh	40.5	0.0	35.3	35.6	0.0	21.0	114.5	17.7	18.3	56.9	19.9	15.2
LnGrp LOS	D		D	D		C	F	B	B	E	B	B
Approach Vol, veh/h		247			509			574			591	
Approach Delay, s/veh		37.6			31.8			18.3			19.5	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.3	32.0	21.8	11.9	4.7	32.7	10.2	23.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.0	27.5	24.5	15.0	4.0	27.5	12.2	28.3				
Max Q Clear Time (g_c+I1), s	2.5	10.9	16.5	7.0	2.1	14.6	6.4	6.2				
Green Ext Time (p_c), s	0.0	2.5	0.8	0.4	0.0	2.6	0.1	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay					24.7							
HCM 2010 LOS					C							

HCM 2010 Signalized Intersection Summary
N12314AnalysisIntersections\HCM 2010\Existing + Cuml + Proj AM.syn

Synchro 8 Report
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Existing + Cuml Proj + Project PM
2: Nordahl Rd & SR 78 EB Ramps

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	60	546	0	0	0	0	1281	662	570	1003	0
Future Volume (veh/h)	375	60	546	0	0	0	0	1281	662	570	1003	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	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	
Parking Bus, Adj	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863			1863	1863	1863	1863		1863	
Adj Flow Rate, veh/h	294	0	759			0	1392	720	620	1090	0	
Adj No. of Lanes	1	0	2			0	2	2	2	2	0	
Peak Hour Factor	0.92	0.92	0.92			0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2			0	2	2	2	2	2	
Cap, veh/h	471	0	840			0	1379	1086	685	2255	0	
Arrive On Green	0.27	0.00	0.27			0.00	0.39	0.39	0.20	0.64	0.00	
Sat Flow, veh/h	1774	0	3167			0	3632	2787	3442	3632	0	
Grp Volume(v), veh/h	294	0	759			0	1392	720	620	1090	0	
Grp Sat Flow(s), veh/h/ln	1774	0	1583			0	1770	1393	1721	1770	0	
Q Serve(g_s), s	16.8	0.0	26.6			0.0	44.8	24.5	20.2	18.6	0.0	
Cycle Q Clear(g_c), s	16.8	0.0	26.6			0.0	44.8	24.5	20.2	18.6	0.0	
Prop In Lane	1.00		1.00			1.00	1.00	1.00	1.00	1.00	0.00	
Lane Grp Cap(c), veh/h	471	0	840			0	1379	1086	685	2255	0	
V/C Ratio(X)	0.62	0.00	0.90			0.00	1.01	0.66	0.91	0.48	0.00	
Avail Cap(c_a), veh/h	509	0	909			0	1379	1086	685	2255	0	
HCM Platoon Ratio	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00			0.00	0.46	0.46	0.53	0.53	0.00	
Uniform Delay (d), s/veh	37.2	0.0	40.8			0.0	35.1	28.9	45.0	10.9	0.0	
Incr Delay (d2), s/veh	2.1	0.0	11.7			0.0	18.9	1.5	9.3	0.4	0.0	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%), veh/h	0.0	0.0	13.0			0.0	25.4	9.6	10.5	9.1	0.0	
LnGrp Delay(d), s/veh	39.3	0.0	52.5			0.0	53.9	30.4	54.3	11.3	0.0	
LnGrp LOS	D		D				F	C	D	B		
Approach Vol, veh/h		1053						2112		1710		
Approach Delay, s/veh		48.8						45.9		26.9		
Approach LOS		D						D		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	36.1	36.1	78.9								
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0								
Max Green Setting (Gmax), s	33.0	70.8										
Max Q Clear Time (g_c+I1), s	20.6	46.8	28.6	20.6								
Green Ext Time (p_c), s	0.0	0.0	1.9	10.7								
Intersection Summary												
HCM 2010 Ctrl Delay		39.9										
HCM 2010 LOS		D										
Notes												

HCM 2010 Signalized Intersection Summary
N12314AnalysisIntersections\HCM 2010\Existing + Cuml + Proj PM.syn

Synchro 8 Report
Page 3

Existing + Cuml Proj + Project PM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel
02/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	515	10	640	688	968	0	0	1058	550
Future Volume (veh/h)	0	0	0	515	10	640	688	968	0	0	1058	550
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	1863	1863	0	0	1863	1863
Adj Flow Rate, veh/h				802	0	445	748	1052	0	0	1150	598
Adj No. of Lanes				2	0	1	2	2	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	2	0	2	2
Cap, veh/h				1086	0	484	819	2096	0	0	1561	486
Arrive On Green				0.31	0.00	0.31	0.24	0.59	0.00	0.00	0.31	0.31
Sat Flow, veh/h				3548	0	1583	3442	3632	0	0	5253	1583
Grp Volume(v), veh/h				802	0	445	748	1052	0	0	1150	598
Grp Sat Flow(s), veh/h/ln				1774	0	1583	1721	1770	0	0	1695	1583
Q Serve(g_s), s				22.3	0.0	29.8	23.3	19.0	0.0	0.0	22.3	33.8
Cycle Q Clear(g_c), s				22.3	0.0	29.8	23.3	19.0	0.0	0.0	22.3	33.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1086	0	484	819	2096	0	0	1561	486
V/C Ratio(X)				0.74	0.00	0.92	0.91	0.50	0.00	0.00	0.74	1.23
Avail Cap(c_a), veh/h				1142	0	510	876	2096	0	0	1561	486
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.25	0.25	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.2	0.0	36.8	40.8	13.0	0.0	0.0	34.1	38.1
Incr Delay (d2), s/veh				2.4	0.0	21.3	4.1	0.2	0.0	0.0	3.1	120.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.3	0.0	15.8	11.5	9.3	0.0	0.0	10.9	31.0
LnGrp Delay(d),s/veh				36.7	0.0	58.1	44.9	13.2	0.0	0.0	37.3	158.8
LnGrp LOS				D		E	D	B			D	F
Approach Vol, veh/h					1247			1800			1748	
Approach Delay, s/veh					44.3			26.4			78.9	
Approach LOS					D			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s					70.7	31.4		39.4				
Change Period (Y+Rc), s					5.6	5.2		5.6				
Max Green Setting (Gmax), s					63.4	*28		30.2				
Max Q Clear Time (q_c+1), s					21.0	25.3		35.8				
Green Ext Time (p_c), s					9.9	0.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					50.2							
HCM 2010 LOS					D							
Notes												

Existing + Cuml Proj + Project PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	5	43	5	5	5	109	1003	5	80	886	405
Future Volume (veh/h)	304	5	43	5	5	5	109	1003	5	80	886	405
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	330	5	47	5	5	5	118	1090	5	87	963	440
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	493	419	440	226	226	149	1906	9	112	1204	542
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.08	0.53	0.53	0.06	0.51	0.51	0.51
Sat Flow, veh/h	1399	1863	1583	1347	856	856	1774	3613	17	1774	2375	1069
Grp Volume(v), veh/h	330	5	47	5	0	10	118	534	561	87	714	689
Grp Sat Flow(s),veh/h/ln	1399	1863	1583	1347	0	1712	1774	1770	1860	1774	1770	1674
Q Serve(g_s), s	18.9	0.2	1.9	0.2	0.0	0.4	5.4	16.9	16.9	4.0	27.6	28.6
Cycle Q Clear(g_c), s	19.3	0.2	1.9	0.4	0.0	0.4	5.4	16.9	16.9	4.0	27.6	28.6
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.01	1.00		0.64
Lane Grp Cap(c), veh/h	451	493	419	440	0	453	149	933	981	112	897	848
V/C Ratio(X)	0.73	0.01	0.11	0.01	0.00	0.02	0.79	0.57	0.57	0.78	0.80	0.81
Avail Cap(c_a), veh/h	537	607	516	523	0	558	193	933	981	214	897	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	22.5	23.1	22.6	0.0	22.6	37.2	13.2	13.2	38.2	16.9	17.1
Incr Delay (d2), s/veh	4.2	0.0	0.1	0.0	0.0	0.0	15.5	2.5	2.4	10.8	7.3	8.3
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	0.1	0.8	0.1	0.0	0.2	3.3	8.8	9.2	2.3	15.1	15.0	
LnGrp Delay(d), s/veh	33.9	22.5	23.2	22.6	0.0	22.6	52.8	15.8	15.7	49.0	24.2	25.5
LnGrp LOS	C	C	C	C		C	D	B	B	D	C	C
Approach Vol, veh/h	382				15					1490		
Approach Delay, s/veh	32.4				22.6				19.3	26.2		
Approach LOS	C				C				B	C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	47.7			25.9	11.0	46.0		25.9				
Change Period (Y+Rc), s	4.0			4.0		4.0		4.0				
Max Green Setting (Gmax), s	41.0			27.0		42.0		27.0				
Max Q Clear Time (g_c+I1), s	18.9			21.3		30.6		2.4				
Green Ext Time (p_c), s	0.1	7.8		0.6		7.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					24.3							
HCM 2010 LOS					C							

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj + Project PM
5: Harmony Grove Rd & Enterprise St

Harmony Grove Parcel
02/09/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	344	292	325	260	193	527		
Future Volume (veh/h)	344	292	325	260	193	527		
Number	4	14	3	8	5	12		
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		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	374	317	353	283	210	573		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	475	404	411	1051	497	810		
Arrive On Green	0.25	0.25	0.23	0.56	0.28	0.28		
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583		
Grp Volume(v), veh/h	374	317	353	283	210	573		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1863	1774	1583		
Q Serve(g_s), s	10.8	10.8	11.0	4.5	5.6	16.0		
Cycle Q Clear(g_c), s	10.8	10.8	11.0	4.5	5.6	16.0		
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	475	404	411	1051	497	810		
V/C Ratio(X)	0.79	0.79	0.86	0.27	0.42	0.71		
Avail Cap(c_a), veh/h	618	526	494	1282	497	810		
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	20.1	21.3	6.5	17.0	10.8			
Incr Delay (d2), s/veh	5.1	5.8	12.4	0.1	2.6	5.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.2	5.3	6.8	2.3	3.1	8.0		
LnGrp Delay(d),s/veh	25.2	25.9	33.7	6.6	19.6	16.0		
LnGrp LOS	C	C	C	A	B	B		
Approach Vol, veh/h	691			636	783			
Approach Delay, s/veh	25.5			21.6	17.0			
Approach LOS	C			C	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		20.7	17.9	19.2				37.1
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		16.2	16.1	19.2				39.8
Max Q Clear Time (g_c+I1), s		18.0	13.0	12.8				6.5
Green Ext Time (p_c), s		0.0	0.4	1.9				1.8
Intersection Summary								
HCM 2010 Ctrl Delay	21.2							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Summary
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Synchro 8 Report
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Existing + Cuml Proj + Project PM
6: Citracado Pkwy & Avenida del Diablo

Harmony Grove Parcel
02/09/2018

Intersection												
Int Delay, s/veh		2.4										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	222	22	328	112	0	465	0
Future Vol, veh/h	0	0	18	0	0	222	22	328	112	0	465	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	20	0	0	241	24	357	122	0	505	0
Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	-	-	253	-	-	179	505	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	746	0	0	833	1056	-	-	0	-	-
Stage 1	0	0	-	0	0	-	-	-	-	0	-	-
Stage 2	0	0	-	0	0	-	-	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	746	-	-	833	1056	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10		11.1			0.4			0			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBln1	SBT	SBR						
Capacity (veh/h)	1056	-	-	746	833	-						
HCM Lane V/C Ratio	0.023	-	-	0.026	0.29	-						
HCM Control Delay (s)	8.5	-	-	10	11.1	-						
HCM Lane LOS	A	-	-	B	B	-						
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.2	-						

HCM 2010 TWSC
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Synchro 8 Report
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Existing+Project+Cumulative Projects PM
7: I-15 NB Ramps & Valley Pkwy

Harmony Grove Parcel
11/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	813	1383	0	0	1172	373	351	1	430	0	0	0
Future Volume (veh/h)	813	1383	0	0	1172	373	351	1	430	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1863			
Adj Flow Rate, veh/h	884	1503	0	0	1274	405	382	1	467			
Adj No. of Lanes	2	3	0	0	3	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	914	2853	0	0	1298	402	607	2	538			
Arrive On Green	0.27	0.56	0.00	0.00	0.26	0.26	0.34	0.34	0.34			
Sat Flow, veh/h	3442	5253	0	0	5253	1574	1707	5	1569			
Grp Volume(v), veh/h	884	1503	0	0	1274	405	383	0	467			
Grp Sat Flow(s), veh/h/ln	1721	1695	0	0	1695	1574	1774	0	1569			
Cap (g_s), s	26.6	19.3	0.0	0.0	26.1	26.8	19.0	0.0	29.2			
Cycle Q Clear(g_c), s	26.6	19.3	0.0	0.0	26.1	26.8	19.0	0.0	29.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00					
Van Grp Cap(c), veh/h	914	2853	0	0	1298	402	608	0	538			
Lane Ratio(X)	0.97	0.53	0.00	0.00	0.98	1.01	0.63	0.00	0.87			
Avail Cap(c_a), veh/h	914	2853	0	0	1298	402	608	0	538			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.27	0.27	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	38.1	14.4	0.0	0.0	38.9	39.1	28.9	0.0	32.3			
Incr Delay (d2), s/veh	9.2	0.2	0.0	0.0	20.9	46.9	4.9	0.0	17.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.8	9.1	0.0	0.0	14.8	16.8	10.1	0.0	15.1			
LnGrp Delay(d),s/veh	47.2	14.6	0.0	0.0	59.8	86.1	33.8	0.0	49.3			
LnGrp LOS	D	B			E	F	C		D			
Approach Vol, veh/h		2387			1679			850				
Approach Delay, s/veh		26.7			66.1			42.3				
Approach LOS		C			E			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.4			32.1	32.3		40.6				
Change Period (Y+Rc), s		5.5			* 4.2	5.5		4.6				
Max Green Setting (Gmax), s		58.9			* 28	26.8		36.0				
Max Q Clear Time (g_c+I), s		21.3			28.6	28.8		31.2				
Green Ext Time (g_c), s		13.5			0.0	0.0		1.9				
Intersection Summary												
HCM 2010 Ctrl Delay			42.9									
HCM 2010 LOS			D									
Notes												

Existing+Project+Cumulative Projects PM
8: Shopping Ctr Dwyll-15 SB Ramps & Valley Pkwy

Harmony Grove Parcel
11/20/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	1605	121	270	843	410	83	70	330	261	150	426
Future Volume (veh/h)	102	1605	121	270	843	410	83	70	330	261	150	426
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	111	1745	132	293	861	483	90	76	359	284	163	463
Adj No. of Lanes	2	3	1	2	3	2	1	1	1	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	1827	565	330	2266	1284	218	229	194	326	187	448
Arrive On Green	0.05	0.36	0.36	0.09	0.41	0.41	0.12	0.12	0.12	0.28	0.28	0.28
Sat Flow, veh/h	3442	5085	1573	3548	5588	3167	1774	1863	1579	1147	658	1580
Grp Volume(v), veh/h	111	1745	132	293	861	483	90	76	359	284	163	463
Grp Sat Flow(s),veh/h/ln	1721	1695	1573	1774	1863	1583	1774	1863	1579	1805	0	1580
Q Serve(g_s), s	4.1	43.5	7.6	10.6	14.1	13.9	6.1	4.8	16.0	30.6	0.0	36.9
Cycle Q Clear(g_c), s	4.1	43.5	7.6	10.6	14.1	13.9	6.1	4.8	16.0	30.6	0.0	36.9
Prop In Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.64	1.00	1.00
Lane Grp Cap(c), veh/h	161	1827	565	330	2266	1284	218	229	194	512	0	448
V/C Ratio(X)	0.69	0.96	0.23	0.89	0.38	0.38	0.41	0.33	1.85	0.87	0.00	1.03
Avail Cap(c_a), veh/h	228	1827	565	330	2266	1284	218	229	194	512	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	0.13	0.13	0.13	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.0	40.6	29.1	58.3	27.2	27.1	52.7	52.1	57.0	44.3	0.0	46.6
Incr Delay (d2), s/veh	5.2	12.8	1.0	4.3	0.0	0.0	1.2	0.8	40.3	15.2	0.0	51.1
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	2.1	22.5	3.5	5.4	7.3	6.1	3.1	2.5	28.6	17.4	0.0	22.4
LnGrp Delay(d),s/veh	66.2	53.5	30.1	62.6	27.2	27.1	53.9	52.9	457.3	59.5	0.0	97.6
LnGrp LOS	E	D	C	E	C	C	D	D	F	E		F
Approach Vol, veh/h	1988			1637			525			910		
Approach Delay, s/veh	52.6			33.5			329.6			78.9		
Approach LOS	D			C			F			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.3	52.2		41.5	10.3	58.2		20.0				
Change Period (Y+Rc), s	* 4.2	5.5		4.6	* 4.2	5.5		4.0				
Max Green Setting (Gmax), s	* 12	46.7		36.9	* 8.6	50.2		16.0				
Max Q Clear Time (g_c+I1), s	12.6	45.5		38.9	6.1	16.1		18.0				
Green Ext Time (p_c), s	0.0	1.0		0.0	0.1	9.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	79.9											
HCM 2010 LOS	E											
Notes												

HCM 2010 Signalized Intersection Summary
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Synchro 7 - Report
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Existing + Cuml Proj + Project PM
9: W Valley Pkwy & Auto Park Way

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	564	882	300	130	355	180	260	985	70	195	805	320
Future Volume (veh/h)	564	882	300	130	355	180	260	985	70	195	805	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	613	959	326	141	386	196	283	1071	76	212	875	348
Adj No. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	602	910	307	172	514	258	344	1462	455	215	1271	673
Arrive On Green	0.17	0.35	0.35	0.05	0.22	0.22	0.10	0.29	0.29	0.06	0.25	0.25
Sat Flow, veh/h	3442	2599	878	3442	2286	1145	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	613	959	326	141	386	196	283	1071	76	212	875	348
Grp Sat Flow(s), veh/h/ln	1721	1770	1708	1721	1770	1661	1721	1695	1583	1721	1695	1583
Q Serve(g, s), s	14.0	28.0	28.0	3.2	12.5	12.8	6.5	15.2	2.9	4.9	12.5	13.0
Cycle Q Clear(g_c), s	14.0	28.0	28.0	3.2	12.5	12.8	6.5	15.2	2.9	4.9	12.5	13.0
Prop In Lane	1.00	1.00	0.51	1.00	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	602	619	598	172	398	374	344	1462	455	215	1271	673
V/C Ratio(X)	1.02	1.05	1.06	0.82	0.75	0.76	0.82	0.73	0.17	0.99	0.69	0.52
Avail Cap(c_a), veh/h	602	619	598	172	398	374	344	1462	455	215	1271	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	26.0	26.0	37.6	28.9	29.0	35.3	25.7	21.3	37.5	27.2	17.0
Incr Delay (d2), s/veh	41.2	50.4	53.9	25.8	7.6	8.9	14.7	3.3	0.8	57.1	3.1	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	10.1	22.3	22.1	2.2	7.0	6.8	3.8	7.5	1.3	4.0	6.2	6.1
LnGrp Delay(d), s/veh	74.2	76.4	79.9	63.5	36.5	37.8	50.0	29.0	22.1	94.5	30.2	19.8
LnGrp LOS	F	F	F	E	D	D	D	C	C	F	C	B
Approach Vol, veh/h	1898			723			1430			1435		
Approach Delay, s/veh	76.9			42.3			32.8			37.2		
Approach LOS	E			D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	28.0	9.0	33.0	13.0	25.0	19.0	23.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	6.9	23.0	4.0	28.0	8.0	20.0	14.0	18.0				
Max Q Clear Time (g_c+I1), s	6.9	17.2	5.2	30.0	8.5	15.0	16.0	14.8				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.0	0.0	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay	50.4											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
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Existing + Cuml Proj + Project PM
10: W Valley Pkwy & W. 9th Ave

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	501	15	261	275	95	30	1015	248	140	878	204
Future Volume (veh/h)	296	501	15	261	275	95	30	1015	248	140	878	204
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	322	545	16	284	299	103	33	1103	270	152	954	222
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	714	21	303	499	169	45	1346	329	121	1540	357
Arrive On Green	0.18	0.20	0.20	0.17	0.19	0.19	0.03	0.33	0.33	0.07	0.42	0.37
Sat Flow, veh/h	1774	3511	103	1774	2599	878	1774	4079	998	1774	1632	958
Grp Volume(v), veh/h	322	274	287	284	202	200	33	917	456	152	783	193
Grp Sat Flow(s), veh/h/ln	1774	1774	1863	1774	1770	1708	1774	1695	1687	1774	1695	1694
Q Serve(g_s), s	15.9	12.8	12.9	13.9	9.1	9.4	1.6	21.8	21.8	6.0	16.5	16.6
Cycle Q Clear(g_c), s	15.9	12.8	12.9	13.9	9.1	9.4	1.6	21.8	21.8	6.0	16.5	16.6
Prop In Lane	1.00		0.06	1.00		0.51	1.00		0.59	1.00		0.57
Lane Grp Cap(c), veh/h	323	360	375	303	340	328	45	1119	557	121	1265	632
V/C Ratio(X)	1.00	0.76	0.76	0.94	0.59	0.61	0.74	0.82	0.82	1.25	0.62	0.62
Avail Cap(c_a), veh/h	323	604	630	303	584	564	101	1119	557	121	1265	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	33.0	33.0	36.0	32.4	32.5	42.5	27.0	27.0	40.9	22.4	22.5
Incr Delay (d2), s/veh	49.1	3.4	3.3	35.6	1.7	1.8	20.9	6.7	12.7	165.4	2.3	4.6
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	11.2	6.6	6.9	7.8	4.6	4.6	1.0	11.2	12.1	8.5	8.1	8.5
LnGrp Delay(d),s/veh	85.0	36.4	36.3	91.6	34.4	34.3	63.4	33.8	29.7	206.3	24.7	27.0
LnGrp LOS	F	D	D	E	C	C	E	C	C	D	F	C
Approach Vol, veh/h		883			686			1406			1328	
Approach Delay, s/veh		54.1			49.7			36.4			46.2	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R), s	1.0	34.0	20.0	22.9	7.2	37.8	21.0	21.0				
Change Period (Y+R), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (G_max), s	29.0	15.0	15.0	30.0	5.0	30.0	16.0	29.0				
Max Q Clear Time (g_c+H), s	23.8	23.9	15.9	14.9	3.6	18.6	17.9	11.4				
Green Ext Time (p_c), s	0.0	3.6	0.0	3.0	0.0	6.0	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay					45.2							
HCM 2010 LOS					D							

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	10	319	22	4	63	390	1000	29	72	503	292
Future Volume (veh/h)	115	10	319	22	4	63	390	1000	29	72	503	292
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	125	11	265	24	4	68	424	1087	32	78	547	317
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	355	301	36	228	194	466	1855	55	101	696	403
Arrive On Green	0.09	0.19	0.19	0.02	0.12	0.26	0.53	0.53	0.06	0.32	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3511	103	1774	2161	1251
Grp Volume(v), veh/h	125	11	265	24	4	68	424	548	571	78	448	416
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1845	1774	1770	1642
Q Serve(g_s), s	6.1	0.4	14.3	1.2	0.2	3.5	20.4	18.6	18.6	3.8	20.2	20.3
Cycle Q Clear(g_c), s	6.1	0.4	14.3	1.2	0.2	3.5	20.4	18.6	18.6	3.8	20.2	20.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.76
Lane Grp Cap(c), veh/h	156	355	301	36	228	194	466	935	974	101	570	529
V/C Ratio(X)	0.80	0.03	0.88	0.67	0.02	0.35	0.91	0.59	0.59	0.77	0.79	0.79
Avail Cap(c_a), veh/h	191	453	385	83	339	288	574	935	974	202	570	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(i)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	29.0	34.7	42.8	34.0	35.4	31.4	14.2	14.2	41.0	27.1	27.1
Incr Delay (d2), s/veh	17.7	0.0	17.0	19.6	0.0	1.1	16.3	2.7	2.6	11.9	10.4	11.2
Initial Q Delay(g3), 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	0.2	7.7	0.8	0.1	1.6	12.0	9.7	10.1	2.2	11.5	10.8	
LnGrp Delay(d), s/veh	57.1	29.1	51.6	62.4	34.0	36.5	47.7	16.9	16.8	52.8	37.5	38.3
LnGrp LOS	E	C	D	E	C	D	B	B	D	D	D	D
Approach Vol, veh/h		401			96		1543			942		
Approach Delay, s/veh		52.7			42.9		25.3			39.2		
Approach LOS		D			D		C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	51.0	6.3	21.3	27.6	32.9	12.2	15.3					
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Green Setting (Gmax), s	46.5	4.1	21.4	28.5	28.0	9.5	16.0					
Max Q Clear Time (g_c+1), s	20.6	3.2	16.3	22.4	22.3	8.1	5.5					
Green Ext Time (p_c), s	0.0	8.5	0.0	0.4	0.8	2.7	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay		33.9										
HCM 2010 LOS		C										

HCM 2010 Signalized Intersection Summary
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	861	921	267	1126	0	0	0	0	350	0	108
Future Volume (veh/h)	0	861	921	267	1126	0	0	0	0	350	0	108
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1776	1776	1776	1776	0				1776	1776	1776
Adj Flow Rate, veh/h	0	897	959	322	1265	0				393	0	130
Adj No. of Lanes	0	2	1	1	2	0				2	0	1
Peak Hour Factor	0.92	0.96	0.96	0.83	0.89	0.92				0.89	0.92	0.83
Percent Heavy Veh, %	0	7	7	7	7	0				7	7	7
Cap, veh/h	0	1796	798	318	2571	0				480	0	214
Arrive On Green	0.00	0.53	0.53	0.19	0.76	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	3463	1499	1691	3463	0				3382	0	1509
Grp Volume(v), veh/h	0	897	959	322	1265	0				393	0	130
Grp Sat Flow(s), veh/h/ln	0	1687	1499	1691	1687	0				1691	0	1509
Q Serve(g_s), s	0.0	16.9	53.2	18.8	14.3	0.0				11.3	0.0	8.1
Cycle Q Clear(g_c), s	0.0	16.9	53.2	18.8	14.3	0.0				11.3	0.0	8.1
Prop In Lane	0.00		1.00	1.00	0.00					1.00		1.00
Lane Grp Cap(c), veh/h	0	1796	798	318	2571	0				480	0	214
V/C Ratio(X)	0.00	0.50	1.20	1.01	0.49	0.00				0.82	0.00	0.61
Avail Cap(c_a), veh/h	0	1796	798	318	2571	0				609	0	272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(i)	0.00	1.00	1.00	0.70	0.70	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.9	23.4	40.6	4.5	0.0				41.7	0.0	40.3
Incr Delay (d2), s/veh	0.0	1.0	102.7	45.5	0.5	0.0				7.0	0.0	2.8
Initial Q Delay(g3), s/veh	0.0	0.0	0.0	0.1	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	8.1	44.5	12.8	6.7	0.0				5.8	0.0	3.5
LnGrp Delay(d), s/veh	0.0	15.9	126.1	86.2	5.0	0.0				48.6	0.0	43.1
LnGrp LOS		B	F	F	A					D		D
Approach Vol, veh/h		1856			1587					523		
Approach Delay, s/veh		72.8			21.5					47.2		
Approach LOS		E			C					D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	58.2			18.8		81.2						
Change Period (Y+Rc), s	4.2			4.6		5.0						
Max Green Setting (Gmax), s	49.4			18.0		72.4						
Max Q Clear Time (g_c+1), s	55.2			13.3		16.3						
Green Ext Time (p_c), s	0.0	0.0		0.9		13.9						
Intersection Summary												
HCM 2010 Ctrl Delay		48.9										
HCM 2010 LOS		D										
Notes												

HCM 2010 Signalized Intersection Summary
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	1032	0	0	778	425	615	5	270	0	0	0
Future Volume (veh/h)	179	1032	0	0	778	425	615	5	270	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1776	1776	0	0	1776	1776	1776	1776	1776			
Adj Flow Rate, veh/h	216	1122	0	0	926	452	653	0	314			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86			
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7			
Cap, veh/h	304	2158	0	0	1678	749	837	0	374			
Arrive On Green	0.09	0.64	0.00	0.00	0.50	0.50	0.25	0.00	0.25			
Sat Flow, veh/h	3281	3463	0	0	3463	1507	3382	0	1509			
Grp Volume(v), veh/h	216	1122	0	0	926	452	653	0	314			
Grp Sat Flow(s), veh/h/ln	1640	1687	0	0	1687	1507	1691	0	1509			
Q Serve(g_s), s	5.4	15.3	0.0	0.0	16.2	18.3	15.3	0.0	16.8			
Cycle Q Clear(g_c), s	5.4	15.3	0.0	0.0	16.2	18.3	15.3	0.0	16.8			
Prop In Lane	1.00		0.00	0.00	1.00	1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	304	2158	0	0	1678	749	837	0	374			
V/C Ratio(X)	0.71	0.52	0.00	0.00	0.55	0.60	0.78	0.00	0.84			
Avail Cap(c_a), veh/h	610	2158	0	0	1678	749	1011	0	451			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(i)	0.79	0.79	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.5	8.3	0.0	0.0	14.8	15.3	29.8	0.0	30.4			
Incr Delay (d2), s/veh	2.4	0.7	0.0	0.0	0.4	1.4	3.3	0.0	11.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.2	7.2	0.0	0.0	7.6	7.8	7.5	0.0	8.2			
LnGrp Delay(d),s/veh	39.9	9.0	0.0	0.0	15.2	16.7	33.1	0.0	41.8			
LnGrp LOS	D	A			B	B	C		D			
Approach Vol, veh/h		1338			1378		967					
Approach Delay, s/veh		14.0			15.7		35.9					
Approach LOS		B			B		D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2					5	6					
Phs Duration (G+Y+Rc), s	59.4					12.6	47.3		25.6			
Change Period (Y+Rc), s	5.0					*4.2	5.0		4.6			
Max Green Setting (Gmax), s	50.0					*16	30.0		25.4			
Max Q Clear Time (q_cH1), s	17.3					7.4	20.3		18.8			
Green Ext Time (p_c), s	10.3					0.4	5.5		2.2			
Intersection Summary												
HCM 2010 Ctrl Delay				20.4								
HCM 2010 LOS				C								
Notes												

Existing + Cuml Proj + Project PM
16: Harmony Grove Village Pkwy & Country Club Dr

Harmony Grove Parcel
02/09/2018

Intersection						
Intersection Delay, s/veh13.5						
Intersection LOS B						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	220	181	300	13	23	231
Future Vol, veh/h	220	181	300	13	23	231
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	239	197	326	14	25	251
Number of Lanes	1	1	1	1	1	1
Approach	EB	WB	SB			
Opposing Approach	WB	EB				
Opposing Lanes	2	2	0			
Conflicting Approach Left	SB			WB		
Conflicting Lanes Left	2	0	2			
Conflicting Approach Right			SB	EB		
Conflicting Lanes Right	0	2	2			
HCM Control Delay	12.6	15.4	12.4			
HCM LOS	B	C	B			
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	181	300	13	23	231
LT Vol	220	0	0	0	23	0
Through Vol	0	181	300	0	0	0
RT Vol	0	0	0	13	0	231
Lane Flow Rate	239	197	326	14	25	251
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.422	0.32	0.543	0.021	0.049	0.409
Departure Headway (Hd)	6.36	5.854	5.995	5.285	7.081	5.865
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	567	614	600	676	506	613
Service Time	4.099	3.592	3.734	3.024	4.827	3.61
HCM Lane V/C Ratio	0.422	0.321	0.543	0.021	0.049	0.409
HCM Control Delay	13.7	11.3	15.7	8.1	10.2	12.6
HCM Lane LOS	B	B	C	A	B	B
HCM 95th-ile Q	2.1	1.4	3.3	0.1	0.2	2

HCM 2010 AWSC
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Existing + Cuml Proj + Project PM
17: Country Club Dr & Harmony Grove Rd

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	570	35	246	290	10	16	40	114	10	89	177
Future Volume (veh/h)	184	570	35	246	290	10	16	40	114	10	89	177
Number	5	2	12	1	6	16	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	200	620	38	267	315	11	17	43	124	11	97	192
Adj No. of Lanes	1	3	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	521	32	89	419	712	34	87	251	399	126	249
Arrive On Green	0.13	0.30	0.30	0.05	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1737	106	1774	1863	1583	153	387	1117	1774	560	1108
Grp Volume(v), veh/h	200	0	658	267	315	11	184	0	0	11	0	289
Grp Sat Flow(s), veh/h/ln	1774	0	1844	1774	1863	1583	1658	0	0	1774	0	1667
Q Serve(g_s), s	8.9	0.0	24.0	4.0	12.6	0.3	7.7	0.0	0.0	4.0	0.0	13.0
Cycle Q Clear(g_c), s	8.9	0.0	24.0	4.0	12.6	0.3	7.7	0.0	0.0	4.0	0.0	13.0
Prop In Lane	1.00	0.06		1.00	0.09		0.67	1.00		0.66		
Lane Grp Cap(c), veh/h	222	0	553	89	419	712	373	0	0	399	0	375
V/C Ratio(X)	0.90	0.00	1.19	0.01	0.75	0.02	0.49	0.00	0.00	0.03	0.00	0.77
Avail Cap(c_a), veh/h	222	0	553	89	419	712	373	0	0	399	0	375
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	28.0	38.0	28.9	12.2	27.0	0.0	0.0	24.2	0.0	29.1
Incr Delay (d2), s/veh	35.2	0.0	102.3	934.0	11.8	0.0	4.6	0.0	0.0	0.1	0.0	14.2
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
50th Pct BackOfQ(50%), veh/h	6.5	0.0	27.9	25.0	7.8	0.2	4.0	0.0	0.0	0.2	0.0	7.4
LnGrp Delay(d), s/veh	69.7	0.0	130.3	972.0	40.7	12.2	31.6	0.0	0.0	24.3	0.0	43.2
LnGrp LOS	E	F		F	D	B	C	C		D	D	
Approach Vol, veh/h	858			593			184			300		
Approach Delay, s/veh	116.2			459.5			31.6			42.5		
Approach LOS	F			F			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	28.0	22.0		14.0	22.0	22.0						
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0						
Max Green Setting (Gmax), s	24.0	18.0		10.0	18.0	18.0						
Max Q Clear Time (g_c+1), s	26.0	15.0		10.9	14.6	9.7						
Intersection Summary												
HCM 2010 Ctrl Delay	201.9											
HCM 2010 LOS	F											

HCM 2010 Signalized Intersection Summary
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Existing + Cuml Proj + Project PM
18: Harmony Grove Rd & Kauana Loa Dr

Harmony Grove Parcel
02/09/2018

Intersection						
Int Delay, s/veh 35.8						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	79	50	440	152	33	647
Future Vol, veh/h	79	50	440	152	33	647
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	86	54	478	165	36	703
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	140	0	1234	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	1121	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1443	-	195	940
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	311	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1443	-	124	940
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	311	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	6.5	68			
HCM LOS				F		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	712	-	-	1443	-	
HCM Lane V/C Ratio	1.038	-	-	0.331	-	
HCM Control Delay (s)	68	-	-	8.7	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	18.4	-	-	1.5	-	

HCM 2010 TWSC
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Existing + Cuml Proj + Project PM
19: Harmony Grove Rd & Harmony Grove Village Pkwy

Harmony Grove Parcel
02/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	91	4	292	160	107	1	533	431	25	294	132
Future Volume (veh/h)	90	91	4	292	160	107	1	533	431	25	294	132
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	99	4	317	174	116	1	579	468	27	320	143
Adj No. of Lanes	1	1	0	1	1	1	0	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	151	6	365	229	153	2	823	699	41	864	734
Arrive On Green	0.07	0.09	0.09	0.21	0.22	0.22	0.00	0.44	0.44	0.02	0.46	0.46
Sat Flow, veh/h	1774	1778	72	1774	1044	696	1774	1863	1583	1774	1863	1583
Grip Volume(v), veh/h	98	0	103	317	0	290	1	579	468	27	320	143
Grip Sat Flow(s), veh/h/ln	1774	0	1850	1774	0	1740	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	4.0	0.0	4.0	12.7	0.0	11.5	0.0	18.5	17.2	1.1	8.2	3.8
Q Clear(g_c), s	4.0	0.0	4.0	12.7	0.0	11.5	0.0	18.5	17.2	1.1	8.2	3.9
Prop In Loss	1.00	0.04		1.00	0.40		1.00	1.00		1.00	1.00	
ave Grp Cap(c), veh/h	127	0	157	365	0	381	2	823	699	41	864	734
V/C Ratio(x)	0.77	0.00	0.65	0.87	0.00	0.76	0.41	0.70	0.67	0.66	0.37	0.19
Aval Cap(c_a), veh/h	256	0.00	462	470	0	589	96	823	699	96	864	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	32.6	28.3	0.0	26.9	36.7	16.6	16.3	35.7	12.8	11.6
Initial Delay (d2), s/veh	9.6	0.0	4.6	13.1	0.0	3.1	86.1	5.0	5.0	16.7	1.2	0.6
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 BackQ(50%),veh/ln	2.3	0.0	2.2	7.6	0.0	5.8	0.1	10.6	8.4	0.7	4.5	1.8
LnGrp Delay (d4),s/veh	43.2	0.0	37.2	41.4	0.0	30.1	122.9	21.6	21.3	52.3	14.0	12.2
LnGrp LOS	D			D		D	C	F	C	D	B	B
Approach Vol, veh/h	201					607	1048			490		
Approach Delay, s/veh	40.1					36.0	21.6			15.6		
Approach LOS	D					D	C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	37.0	19.6	10.8	4.6	38.6	9.8	20.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (G_max), s	4.0	32.5	19.5	16.0	4.0	32.5	10.6	24.9				
Max Q Clear Time (g_c+H), s	3.1	20.5	14.7	6.0	2.0	10.2	6.0	13.5				
Green Ext Time (p_c), s	0.0	4.5	0.4	0.3	0.0	2.4	0.1	1.3				

ATTACHMENT G

SUPPLEMENTAL DISCUSSION OF THE APPROVED PROJECT DEVIATION
SOUTH OF PROJECT DRIVEWAY A

MEMORANDUM

To: Mr. David Kovach
Kovach Companies

Date: April 30, 2018

From: John P. Keating, P.E.
Linscott, Law & Greenspan, Engineers

LLG Ref: 3-16-2314

Subject: Project Access (Western Driveway) – Intersection Sight Distance

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Transportation
Parking

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Linscott, Law & Greenspan, Engineers (LLG) has conducted the Sight Distance evaluation at the crest vertical curve near the western Project Driveway (see **Figure A**) to determine adequate sight distance per the San Diego County Public Road Standards requirements.

Existing Conditions

Country Club Drive is currently an unclassified rural residential roadway. It is about 20 feet wide and does not have shoulders, curb/gutter, or sidewalks. A speed limit is not posted. Drivers are responsible to travel at speeds reasonable and prudent for conditions and within their ability to stop for a roadway obstruction. The existing roadway segment near Cordrey Drive does not meet County Standards for a 30 mph Rural Residential Collector due to these below-standard features: (1) lane-width; (2) road surfacing width; (3) paved shoulder width; (4) parkway width, and; 5) maximum desirable grade (see **Table A**). Therefore it currently has a functional speed of about 25 mph. Based on the Caltrans Highway Design Manual (HDM), which is utilized by the County of San Diego, drivers traveling not more than 25 mph have adequate stopping sight distance over the crest vertical curve.

TABLE A
ROADWAY FEATURE COMPARISON
“RURAL RESIDENTIAL COLLECTOR” STANDARD VS. EXISTING COUNTRY CLUB DRIVE

Roadway Feature	Rural Residential Collector ^a	Existing Country Club Drive west/of Cordrey Drive ^b	Existing Road Meets County Standard?
# Lanes / Lane Width	2 / 12'	2 / 9'-10'	No
Road Surfacing Width	28'	18' - 20'	No
R.O.W. Width	48'	55'	Yes
Paved Shoulders (#/Width)	2 / 2'	0 / 0'	No
Parkway Width	10'	0'	No
Min Curve Radius	300'	N/A – segment is straight	–
Max Desirable Grade	12%	Actual grade ~ 13%	No
Min Design Speed (mph)	30	Sub-30 ^b	No

Footnotes:

- a. Source: County of San Diego Public Road Standards, Table 2–B
b. Source: 2018 LLG and Project Design Consultants field observations.

Existing Traffic Volumes and Speeds

Country Club Drive currently carries very low traffic volumes. It serves approximately four homes east of the Proposed Project that have access through the Project, the homes off of Cordrey Drive, a few homes on Country Club Drive, and the Harmony Grove Spiritualist Association property located at the end of the road. Most of the traffic west of the Project comes from Cordrey Drive. These drivers will yield at Country Club Drive before turning east, and would be entering Country Club Drive at low speeds.

Existing speeds were surveyed on Country Club Drive to determine if they supported the Project's design exception request discussed in the next section. LLG commissioned 7 days' worth of vehicular speed surveys for eastbound Country Club Drive at a location approximately 200 feet west of Cordrey Drive. This is the last point where eastbound drivers have to decide whether to stop abruptly for a six-inch object at the location of the proposed Project Driveway. The results of the survey show the following speed characteristics for existing eastbound vehicular travel:

- Total observations (7 days) = 237 vehicles
- 85th percentile speed (average) = 22.1 mph
- Maximum observed speed (average) = 25.8 mph
- Minimum observed speed (average) = 8.6 mph

This data shows that the existing eastbound speeds approaching the crest of the vertical curve are well below what would have been expected for a Rural Residential Collector capacity. **Attachment 1** contains a summary of the 7 days' results, along with the speed survey results.

Project Conditions

The Proposed Project intends to locate a driveway on Country Club Drive near the westerly Project boundary, on the east side of a crest vertical curve. This driveway is subject to three movements where sight distance should be checked:

1. Westbound left-turn into Project Driveway.
2. Northbound left-turn out of Project Driveway.
3. Northbound right-turn out of Project Driveway.

In all three cases, there are no sight distance constraints between the Project Driveway traffic and westbound traffic, since both are on the same side of the crest vertical curve.

With respect to the sight distance between eastbound Country Club Drive traffic as it comes over the crest vertical curve and traffic entering or exiting the Project Driveway, the available sight distance calculation is a function of approach speed (22.1 mph - 85th percentile) and object height (6 inches - standard). As shown on the

VTM, a design exception was prepared and has been approved by the County for this location in which the Project will construct and improve the profile of Country Club Drive by lengthening the crest vertical curve, thus improving the stopping sight distance of a 6 inch object in the roadway to approximately 155 feet, corresponding to a speed of 27.5 mph. Again, the 85th percentile speeds eastbound are currently 22.1 mph, which require approximately 115 feet of stopping sight distance. Therefore this improvement (design exception) will meet the County's sight distance requirements at this location.

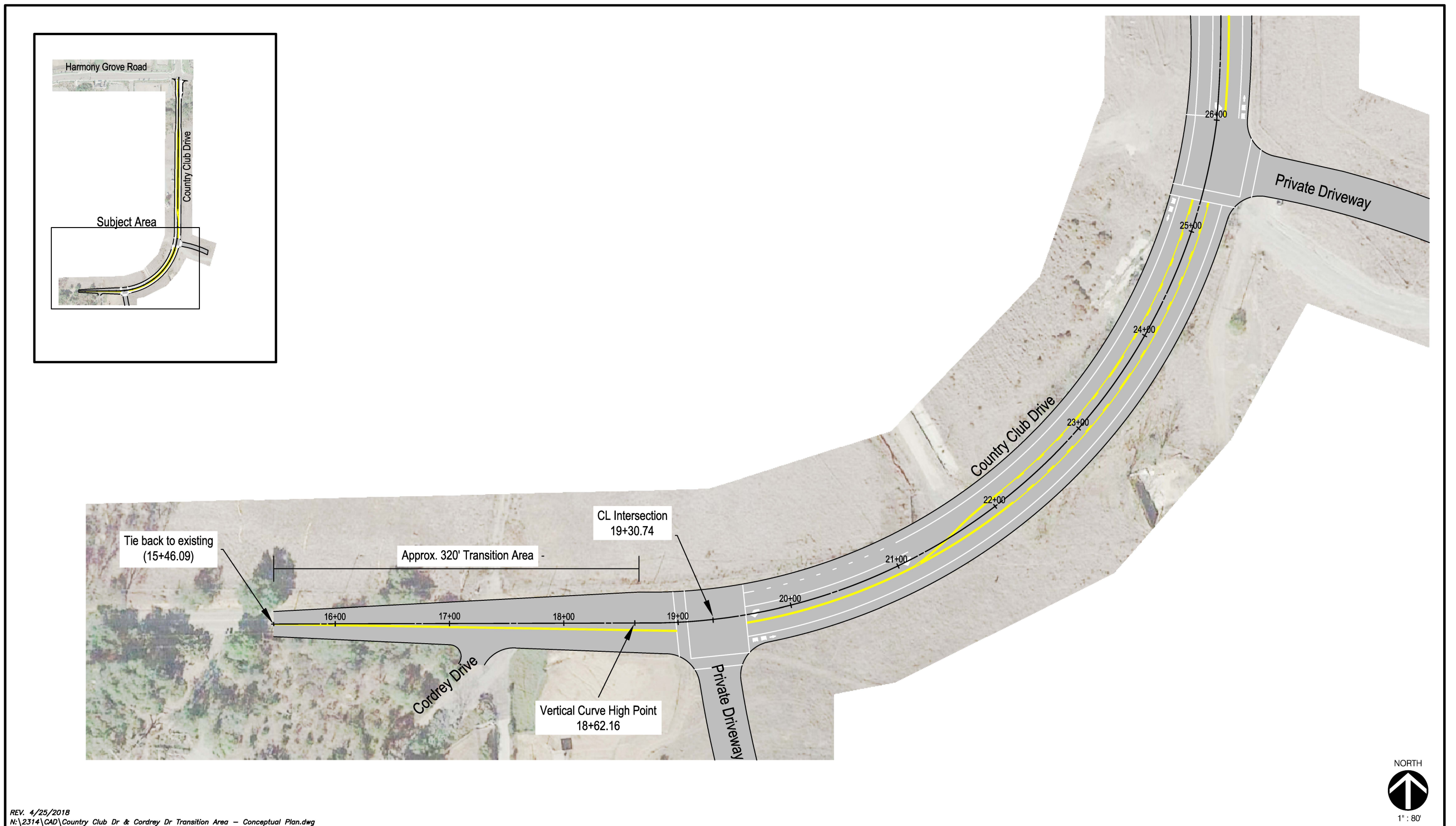
It should be noted that both Country Club Drive and Cordrey Drive dead-end west of the Project, and no Project traffic volumes are assigned to/from the west that would contribute to or change existing traffic volumes or speeds.

This improvement also addresses the transition from the full width Rural Residential Collector improvements at the western Project Driveway to the existing nonconforming roadway to the west. As shown, the observed 85th percentile eastbound speed is 22.1 mph, which is well below the 27.5 mph design speed provided by the design exception.

cc: File

Attachment: Figure A – Country Club Drive and Cordrey Drive Transition Area – Conceptual Plan

Attachment 1 – EB Country Club Drive Speed Summary Sheet and Survey Data



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Figure A

Country Club Drive & Cordrey Drive Transition Area - Conceptual Plan

Attachment 1

SPEED SURVEY SUMMARY
COUNTRY CLUB DRIVE – EASTBOUND DIRECTION OF TRAVEL
(W/O CORDREY DRIVE)

Date	Tues. 4/10/18	Wed. 4/11/18	Thur. 4/12/18	Fri. 4/13/18	Sat. 4/14/18	Sun. 4/15/18	Mon. 4/16/18	7 Day Summaries
# of Observations:	30	23	27	38	43	50	26	237 (tot.)
Speeds (mph)								
85 th Percentile:	22.0	22.4	22.9	21.1	23.8	21.3	21.4	22.1 (avg.)
Maximum:	25.8	24.3	27.7	25.4	28.8	24.4	24.2	25.8 (avg.)
Minimum:	8.6	9.8	8.0	8.7	9.4	9.0	6.8	8.6 (avg.)

Source: LLG Engineers, 2018

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Tuesday April 10, 2018

Vehicles = 30

Maximum = 25.8 mph, Minimum = 8.6 mph, Mean = 18.3 mph
85% Speed = 21.98 mph, 95% Speed = 24.48 mph, Median = 19.21 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0500	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0600	1 3.333%	14.4	14.4	14.4	14.4	14.4	14.4
0700	3 10.00%	16.6	21.5	19.6	20.6	21.5	21.5
0800	1 3.333%	21.4	21.4	21.4	21.4	21.4	21.4
0900	2 6.667%	11.9	22.7	17.3	17.3	22.7	22.7
1000	2 6.667%	19.9	20.1	20.0	20.0	20.1	20.1
1100	3 10.00%	19.4	20.4	19.8	19.7	20.4	20.4
1200	4 13.33%	13.4	17.0	15.4	15.6	17.0	17.0
1300	2 6.667%	16.2	16.3	16.3	16.2	16.3	16.3
1400	3 10.00%	8.6	23.1	16.3	17.2	23.1	23.1
1500	2 6.667%	13.5	25.8	19.7	19.7	25.8	25.8
1600	4 13.33%	15.1	21.6	18.7	19.0	21.6	21.6
1700	1 3.333%	23.4	23.4	23.4	23.4	23.4	23.4
1800	1 3.333%	21.1	21.1	21.1	21.1	21.1	21.1
1900	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2100	1 3.333%	19.0	19.0	19.0	19.0	19.0	19.0
2200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
----	30 100.0%	8.6	25.8	18.3	19.2	22.0	24.5

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Wednesday April 11, 2018

Vehicles = 23

Maximum = 24.3 mph, Minimum = 9.8 mph, Mean = 18.1 mph
85% Speed = 22.36 mph, 95% Speed = 24.15 mph, Median = 18.23 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	1 4.348%	23.4	23.4	23.4	23.4	23.4	23.4
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0500	1 4.348%	18.7	18.7	18.7	18.7	18.7	18.7
0600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0700	2 8.696%	18.2	18.4	18.3	18.3	18.4	18.4
0800	3 13.04%	16.9	22.3	18.8	17.2	22.3	22.3
0900	0 0.000%	0.0	0.0	0.0	134.2	134.2	134.2
1000	2 8.696%	15.8	20.0	17.9	17.9	20.0	20.0
1100	1 4.348%	18.7	18.7	18.7	18.7	18.7	18.7
1200	2 8.696%	13.9	19.3	16.6	16.6	19.3	19.3
1300	3 13.04%	15.0	22.4	19.1	19.7	22.4	22.4
1400	2 8.696%	18.2	20.9	19.5	19.5	20.9	20.9
1500	2 8.696%	9.8	14.6	12.2	12.2	14.6	14.6
1600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
1700	1 4.348%	14.5	14.5	14.5	14.5	14.5	14.5
1800	2 8.696%	15.5	24.3	19.9	19.9	24.3	24.3
1900	1 4.348%	17.5	17.5	17.5	17.5	17.5	17.5
2000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
----	23 100.0%	9.8	24.3	18.1	18.2	22.4	24.1

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Thursday April 12, 2018

Vehicles = 27

Maximum = 27.7 mph, Minimum = 8.0 mph, Mean = 17.6 mph
85% Speed = 22.87 mph, 95% Speed = 26.05 mph, Median = 17.45 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0500	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0600	1 3.704%	8.7	8.7	8.7	8.7	8.7	8.7
0700	2 7.407%	17.4	19.3	18.4	18.4	19.3	19.3
0800	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0900	1 3.704%	18.4	18.4	18.4	18.4	18.4	18.4
1000	1 3.704%	19.3	19.3	19.3	19.3	19.3	19.3
1100	1 3.704%	14.3	14.3	14.3	14.3	14.3	14.3
1200	1 3.704%	21.8	21.8	21.8	21.8	21.8	21.8
1300	6 22.22%	9.9	22.9	17.8	18.5	22.8	22.9
1400	4 14.81%	9.6	23.6	16.4	16.3	23.6	23.6
1500	3 11.11%	14.6	19.8	17.2	17.0	19.8	19.8
1600	2 7.407%	22.9	27.7	25.3	25.3	27.7	27.7
1700	4 14.81%	15.3	23.4	18.2	17.0	23.4	23.4
1800	1 3.704%	8.0	8.0	8.0	8.0	8.0	8.0
1900	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
----	27 100.0%	8.0	27.7	17.6	17.4	22.9	26.0

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Friday April 13, 2018

Vehicles = 38

Maximum = 25.4 mph, Minimum = 8.7 mph, Mean = 16.9 mph
85% Speed = 21.08 mph, 95% Speed = 23.32 mph, Median = 16.92 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0500	1 2.632%	15.5	15.5	15.5	15.5	15.5	15.5
0600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0700	2 5.263%	12.6	19.4	16.0	16.0	19.4	19.4
0800	2 5.263%	13.9	17.1	15.5	15.5	17.1	17.1
0900	2 5.263%	16.7	17.9	17.3	17.3	17.9	17.9
1000	3 7.895%	11.3	25.4	19.0	20.4	25.4	25.4
1100	4 10.53%	8.7	19.3	15.8	17.7	19.3	19.3
1200	2 5.263%	18.7	20.6	19.7	19.7	20.6	20.6
1300	4 10.53%	14.9	21.4	19.3	20.4	21.4	21.4
1400	4 10.53%	9.7	15.5	13.3	13.9	15.5	15.5
1500	4 10.53%	14.1	21.5	18.7	19.7	21.5	21.5
1600	1 2.632%	13.8	13.8	13.8	13.8	13.8	13.8
1700	3 7.895%	16.4	23.2	18.8	16.7	23.2	23.2
1800	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
1900	2 5.263%	11.9	16.5	14.2	14.1	16.5	16.5
2000	2 5.263%	8.7	13.2	10.9	11.0	13.2	13.2
2100	1 2.632%	20.5	20.5	20.5	20.5	20.5	20.5
2200	1 2.632%	22.6	22.6	22.6	22.6	22.6	22.6
2300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
----	38 100.0%	8.7	25.4	16.9	16.9	21.1	23.3

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Saturday April 14, 2018

Vehicles = 43

Maximum = 28.8 mph, Minimum = 9.4 mph, Mean = 18.3 mph
85% Speed = 23.76 mph, 95% Speed = 26.80 mph, Median = 17.90 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	1 2.326%	14.4	14.4	14.4	14.4	14.4	14.4
0500	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0700	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0800	2 4.651%	20.4	25.0	22.7	22.7	25.0	25.0
0900	1 2.326%	18.9	18.9	18.9	18.9	18.9	18.9
1000	9 20.93%	22.4	28.8	24.5	23.8	28.0	28.8
1100	3 6.977%	12.9	19.3	15.0	12.9	19.3	19.3
1200	1 2.326%	18.7	18.7	18.7	18.7	18.7	18.7
1300	6 13.95%	9.4	17.8	15.1	15.7	17.8	17.8
1400	5 11.63%	11.5	17.9	14.7	14.1	17.9	17.9
1500	1 2.326%	16.1	16.1	16.1	16.1	16.1	16.1
1600	7 16.28%	14.5	22.7	17.3	16.1	21.9	22.7
1700	4 9.302%	11.8	19.4	15.5	15.4	19.4	19.4
1800	1 2.326%	17.2	17.2	17.2	17.2	17.2	17.2
1900	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2000	1 2.326%	23.3	23.3	23.3	23.3	23.3	23.3
2100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2300	1 2.326%	22.4	22.4	22.4	22.4	22.4	22.4
----	43 100.0%	9.4	28.8	18.3	17.9	23.8	26.8

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Sunday April 15, 2018

Vehicles = 50

Maximum = 24.4 mph, Minimum = 9.0 mph, Mean = 17.3 mph
85% Speed = 21.31 mph, 95% Speed = 23.11 mph, Median = 17.03 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	1 2.000%	16.4	16.4	16.4	16.4	16.4	16.4
0500	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0700	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0800	2 4.000%	19.7	21.4	20.6	20.6	21.4	21.4
0900	1 2.000%	18.8	18.8	18.8	18.8	18.8	18.8
1000	2 4.000%	9.0	14.3	11.6	11.6	14.3	14.3
1100	1 2.000%	15.8	15.8	15.8	15.8	15.8	15.8
1200	10 20.00%	9.3	19.7	16.0	16.9	19.0	19.7
1300	8 16.00%	13.7	23.6	18.1	17.3	22.8	23.6
1400	4 8.000%	11.3	24.4	18.1	18.3	24.4	24.4
1500	7 14.00%	13.9	22.7	18.8	19.5	22.4	22.7
1600	6 12.00%	10.9	21.9	17.3	18.7	21.8	21.9
1700	5 10.00%	15.4	21.1	18.0	16.3	21.1	21.1
1800	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
1900	1 2.000%	13.7	13.7	13.7	13.7	13.7	13.7
2000	1 2.000%	21.2	21.2	21.2	21.2	21.2	21.2
2100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2300	1 2.000%	11.2	11.2	11.2	11.2	11.2	11.2
----	50 100.0%	9.0	24.4	17.3	17.0	21.3	23.1

Speed Statistics by Hour

Location: Country Club Drive, West of Cordrey Drive
Direction: Eastbound Volume
Date Range: Monday April 16, 2018

Vehicles = 26

Maximum = 24.2 mph, Minimum = 6.8 mph, Mean = 16.0 mph
85% Speed = 21.42 mph, 95% Speed = 23.81 mph, Median = 15.46 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%
0000	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0200	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0500	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
0600	1 3.846%	14.9	14.9	14.9	14.9	14.9	14.9
0700	2 7.692%	6.8	21.4	14.1	14.1	21.4	21.4
0800	1 3.846%	24.2	24.2	24.2	24.2	24.2	24.2
0900	4 15.38%	9.4	15.0	11.7	11.2	15.0	15.0
1000	2 7.692%	10.1	21.4	15.7	15.7	21.4	21.4
1100	1 3.846%	23.2	23.2	23.2	23.2	23.2	23.2
1200	3 11.54%	7.3	20.1	13.4	12.8	20.1	20.1
1300	4 15.38%	9.6	21.1	15.4	15.6	21.1	21.1
1400	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
1500	1 3.846%	15.9	15.9	15.9	15.9	15.9	15.9
1600	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
1700	4 15.38%	17.3	21.4	19.9	20.4	21.4	21.4
1800	1 3.846%	13.4	13.4	13.4	13.4	13.4	13.4
1900	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2000	1 3.846%	22.8	22.8	22.8	22.8	22.8	22.8
2100	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
2200	1 3.846%	14.7	14.7	14.7	14.7	14.7	14.7
2300	0 0.000%	0.0	0.0	0.0	0.0	0.0	0.0
----	26 100.0%	6.8	24.2	16.0	15.5	21.4	23.8

ATTACHMENT H

VALIDATION OF CONSERVATIVE PROJECT AVERAGE DAILY TRAFFIC

MEMORANDUM

To: Mr. David Kovach

Date: April 25, 2018

From: Chris Mendiara
Cara Hilgesen
Linscott, Law & Greenspan, Engineers

LLG Ref: 3-14-2314

Subject: HGVS – Trip Generation Comparison

Linscott, Law & Greenspan, Engineers (LLG) has prepared this memo to document the changes in the trip generation for the proposed Harmony Grove Village South Project (Project) compared to the Final EIR Traffic Study.

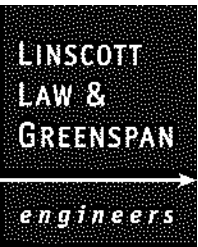
At the initiation of the EIR traffic study, the Project description was not yet defined as to the total number of residential units and the type of residential units to be constructed. A conservative approach was developed assuming 450 single-family detached dwelling units (DU). The Final EIR Traffic Study evaluated Project impacts against this unit count. Utilizing the SANDAG *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* single-family residential trip rate of 10 average daily trips (ADT) per DU, the 450 DU generate **4,500 ADT**.

Since the original analysis was completed, the Project description has been further refined to propose 453 total DU. Of these, 193 are proposed as single-family detached units amounting to 1,930 ADT. The remaining 260 units are proposed as attached multi-family DU by design. Per SANDAG, these units fall into the “multi-family” category which uses a rate of eight (8) ADT per DU. This amounts to 2,080 ADT. Thus, the total Project trips for both the single-family detached and multi-family attached units as currently proposed is calculated at **4,010 ADT**.

The Final EIR traffic analysis therefore represents a conservative assessment.

Table 1 at the end of this memo summarizes the trip generation comparison between the EIR traffic analysis and the actual Project trip generation based on the defined residential land use types.

Attachments: Table 1: Trip Generation Comparison



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TABLE 1
TRIP GENERATION COMPARISON

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
		Rate ^a	Volume	% of ADT ^a	In:Out	Volume			% of ADT ^a	In:Out	Volume		
					Split	In	Out	Total		Split	In	Out	Total
EIR TRAFFIC STUDY													
Single-Family Detached Residential	450 DU	10 /DU	4,500	8%	3:7	108	252	360	10%	7:3	315	135	450
ACTUAL PROJECT DESCRIPTION													
Single-Family Detached Residential	193 DU	10 /DU	1,930	8%	3:7	46	108	154	10%	7:3	135	58	193
Multi-Family Attached Residential	260 DU	8 /DU	2,080	8%	2:8	33	133	166	10%	7:3	146	62	208
TOTAL	453 DU	—	4,010	—	—	79	241	320	—	—	281	120	401
Additional Trips Analyzed in Final EIR			490	—	—	29	11	40	—	—	34	15	49

Footnotes:

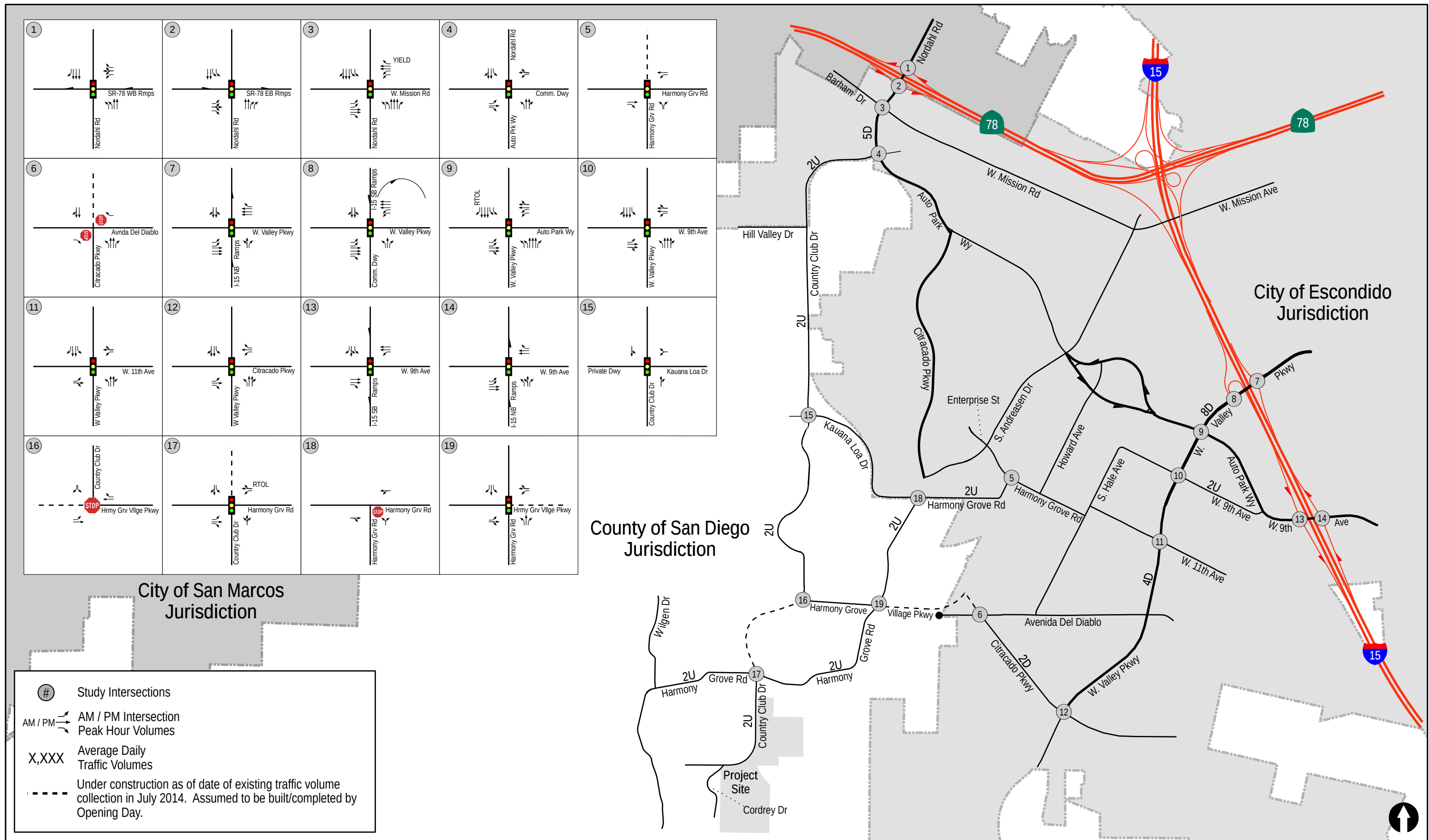
- a. Rate is based on SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.

General Notes:

1. ADT = Average daily traffic, rounded to the nearest tenth.
2. DU = Dwelling Units

ATTACHMENT I

MODIFICATIONS TO FINAL TIA FIGURE 3-1: EXISTING CONDITIONS DIAGRAM



TRAFFIC IMPACT ANALYSIS
HARMONY GROVE VILLAGE SOUTH
County of San Diego, California
April 6, 2017

Prepared for the County of San Diego

PSD2015-SP-15-002

LLG Ref. 3-14-2314



EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Harmony Grove Village South Project. The Project is located east of Country Club Drive and south of Harmony Grove Road in the San Dieguito Planning Community in the County of San Diego. The study area surrounding the Project site includes roadways located in the County of San Diego and City of Escondido jurisdictions.

The property is currently zoned RR and A70 with minimum lot sizes of 0.5 acres. The adopted *General Plan* designation is SR-05, and the Regional Category is Semi-Rural. The Project would require a General Plan Amendment to redesignate a portion of the Project site to Village- Regional Category (53 acres) and change the Land Use Designation to Residential (VR-10.9) and Neighborhood Commercial (NC). The remaining 58 acres will remain designated as Semi-Rural Regional Category.

The project consists of a mix of residential, commercial/civic and institutional uses, along with parks and open space. Specifically, the project proposes to construct 450 dwelling units that consist of single-family detached, single-family attached and multi-family residential uses and a small community center with commercial/civic uses (the Center House). The total square footage of structure associated with the Center House would be approximately 5,000 square feet, with a minimum of 1,500 square feet devoted to commercial uses. The commercial/civic land uses include a community-civic serving component such as for parks, overnight accommodations of up to 4 rooms that can only be used by HGVS and HGV guests, a gym, an event lawn, and recreational facilities like a pool or clubhouse available only to HGVS residents. The commercial/civic land uses will also include a public commercial component such as for food/beverage service uses like for a coffee shop or cafe. (These uses would not generate new primary trips.) The Institutional zone accommodates public facilities that may be needed to support the project, such as a wastewater treatment plant that is proposed at the northwestern portion of the site. If wastewater treatment land uses ultimately are not needed, then the land may be utilized for an alternative use, such as a water quality detention basin, trailhead, park, and/or interpretive center. The project will preserve 68% of the site in open space including 33 acres of preserved biological open space. There will be approximately 4 acres of public and private parks, 22 acres of naturalized open space, and 16 acres of landscaped areas.

The project application includes a General Plan Amendment (GPA), a Specific Plan, a Tentative Map; and a Major Use Permit for the Water Reclamation Facility. Additional discretionary permits will be needed to implement the Project, as identified in the Specific Plan.

The Project is calculated to generate 4,500 ADT, with a total of 360 trips during the AM peak hour (108 inbound/252 outbound trips) and 450 total trips during PM peak hour (315 inbound/135 outbound). Since the preparation of this traffic study, the Project site plan has changed to increase the number of proposed units from 450 residential dwelling units (DU) to 453 DU. The analysis provided in this report was conducted using the 450 DU amount. With an increase of three (3) units, the additional 30 ADT with 2 AM peak hour and 3 PM peak hour trips generated would

have a nominal effect on the analysis and would not change the conclusions of significance presented in this report. A trip generation comparison between the 450 DU Project analyzed in this report and the 453 DU project with the ancillary commercial/civic uses is provided in the appendix for reference.

Based on the County of San Diego significance criteria, the Project would result in seven (7) significant traffic impacts. Based on the City of Escondido significance criteria, the Project would result in three (3) significant traffic impacts.

For direct impacts, both the City and County require the implementation of physical improvements to mitigate impacts to below a level of significance.

For locations within the unincorporated County of San Diego San Dieguito Planning Area that located along segments defined as “TIF Eligible Roadways”, payment toward the County of San Diego Transportation Impact Fee (TIF) Program is required per County guidelines to reduce cumulative impacts to less than significant.

As this is a GPA project, the County’s TIF Program requires that it shall be updated to include potential changes to the Land Use Element and Mobility Element. The Project shall provide a fair share contribution towards the cost of updating the County’s TIF program. The amount of the fair share contribution will be determined at the time the County begins the effort to update the TIF program. The cost of the TIF update will be shared by all of the approved GPAs that are being incorporated into the TIF Program. Prior to the recordation of the First Final Map for any unit, the Project shall provide its fair share contribution towards the cost of updating the County’s TIF program to incorporate the approved GPAs into the TIF Program. The County’s TIF Program update shall be approved by the Board of Supervisors.

Mitigation has been identified for the seven (7) impacts within County jurisdiction and the three (3) impacts within City of Escondido jurisdiction. These identified measures for impacts in the County will result in less-than-significant impacts for identified direct and cumulative Project-related effects upon implementation, and will become Conditions of the Project, as appropriate. Because the City of Escondido is a lead agency under CEQA for impacts within their jurisdiction, however; it is the City, and not the County, that has responsibility for approval/assurance of implementation of those improvements. As such, the County cannot guarantee ultimate implementation or timing of City-approved mitigation. Thus, for the purposes of this document, impacts within the City of Escondido are identified as remaining significant and unavoidable pending City action.

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APPENDIX

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TRAFFIC IMPACT ANALYSIS
HARMONY GROVE VILLAGE SOUTH
County of San Diego, California
April 6, 2017

1.0 INTRODUCTION

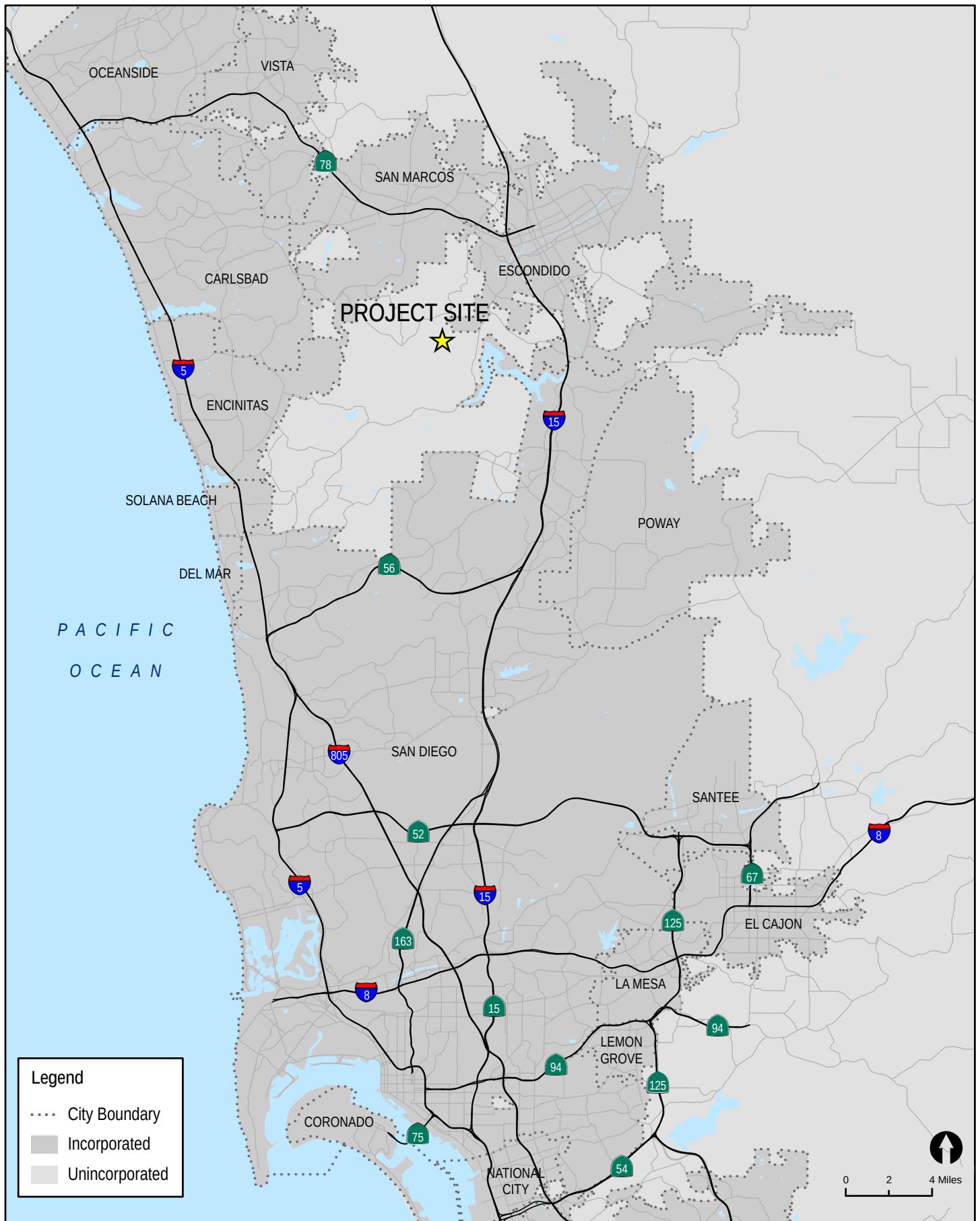
1.1 Purpose of the Report

The following traffic study has been prepared to determine and evaluate the traffic impacts on the local circulation system due to the Harmony Grove Village South residential development (the “Project”) in the County of San Diego. This traffic study analyzes intersections, street segments and mainline freeway segments in the Project vicinity to determine potential impacts related to the traffic generated by the proposed Project.

Included in this traffic study are the following:

- Project Description
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Trip Generation/Distribution/Assignment
- Existing + Cumulative Projects Discussion
- Analysis of Near-Term Conditions
- Buildout Assessment
- Access and Other Issues
- Significance of Impacts and Mitigation Measures
- Reference and List of Preparers and Organizations Contacted

Figure 1–1 shows the vicinity map. **Figure 1–2** shows a more detailed Project area map.

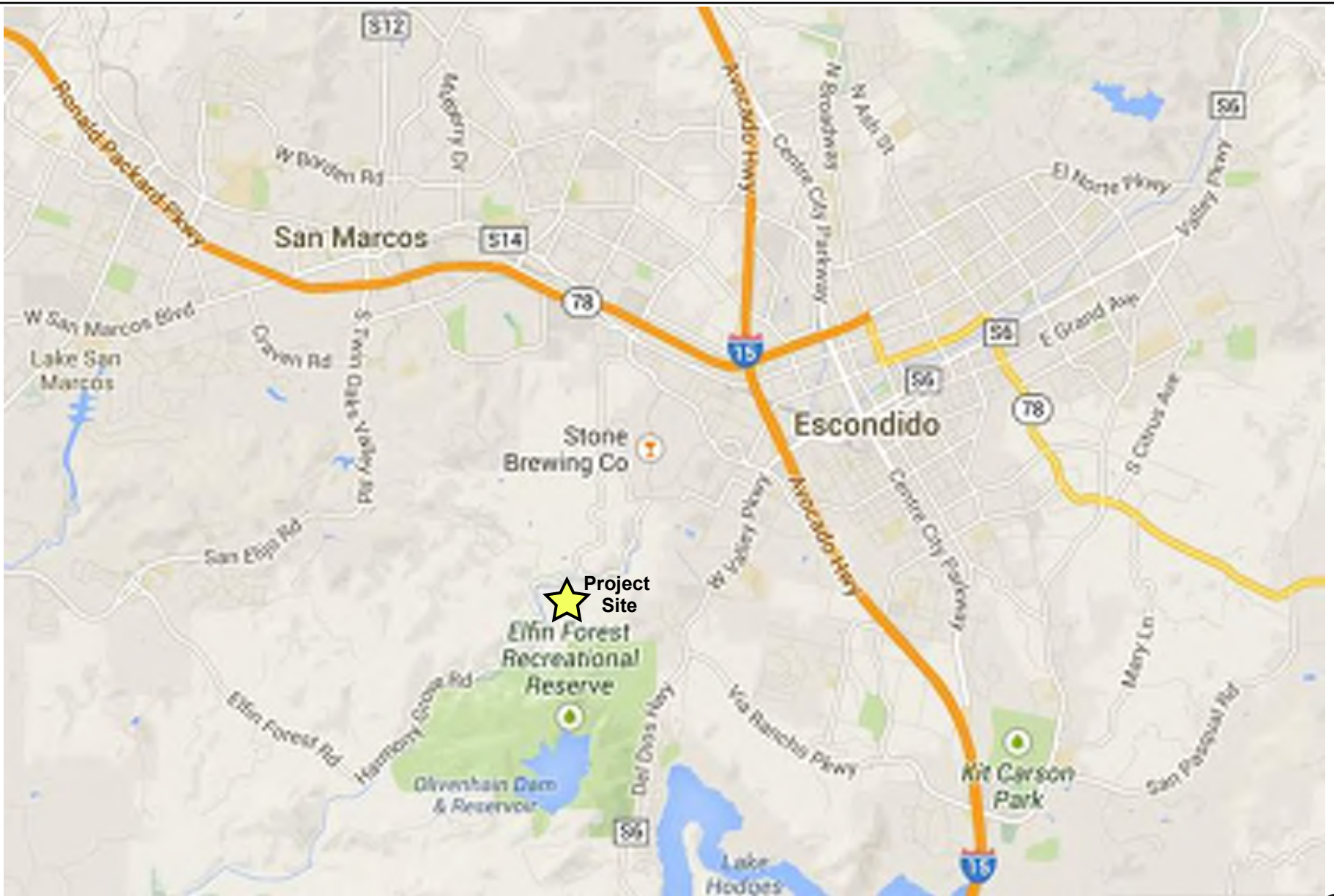


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Figure 1-1

Vicinity Map

HARMONY GROVE PARCEL



2.0 PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The Project is located east of Country Club Drive and south of Harmony Grove Road in the San Dieguito Planning Community in the County of San Diego. The property is adjacent to the City of Escondido to the east/northeast. The Harmony Grove Village project is located west/northwest of the Project site.

2.2 Project Description

The current General Plan designation is SR-0.5 and the Regional Category is Semi-Rural with minimum lot sizes of 0.5 to 1 acre. The Project will redesignate a portion of the project site to Village- Regional Category (53 acres) and change the Land Use Designation to Residential (VR-10.9) and Neighborhood Commercial (NC). (The remaining 58 acres will remain designated as Semi-Rural Regional Category.)

The project consists of a mix of residential, commercial/civic and institutional uses, along with parks and open space. Specifically, the project proposes to construct 450 dwelling units that consist of single-family detached, single-family attached and multi-family residential uses and a small community center with commercial/civic uses (the Center House). The total square footage of structure associated with the Center House would be approximately 5,000 square feet, with a minimum of 1,500 square feet that will be devoted to commercial uses. The Commercial/Civic land uses may include a park, overnight accommodations of up to 4 rooms that can only be used by HGVS and HGV guests, a gym, an event lawn, and private recreational facilities like a pool or clubhouse that can be only be uses by HGVS. The Commercial/Civic land uses also include a public commercial component that may include food/beverage services (such as a café); administrative and professional services; convenience sales; or personal services (including hair or nail salon, day spa). The Institutional land uses may include public facilities needed to support the project, such as a wastewater treatment plant that is proposed at the northwestern portion of the site. If wastewater treatment land uses ultimately are not needed, then the land may be utilized for an alternative use, such as a water quality detention basin, trailhead, park, and/or interpretive center. The project will preserve 68% of the site in open space including 33 acres of preserved biological open space. There will be approximately 4 acres of public and private parks, 22 acres of naturalized open space, and 16 acres of landscaped areas.

Since the preparation of this traffic study, the Project site plan has changed to increase the number of proposed units from 450 residential DU to 453 DU. The analysis provided in this report was conducted using the 450 DU amount. With an increase of three (3) units, the additional 30 ADT with 2 AM peak hour and 3 PM peak hour trips generated would have a nominal effect on the analysis and would not change the conclusions of significance presented in this report. This is discussed in further detail in *Section 7.1 Trip Generation*.

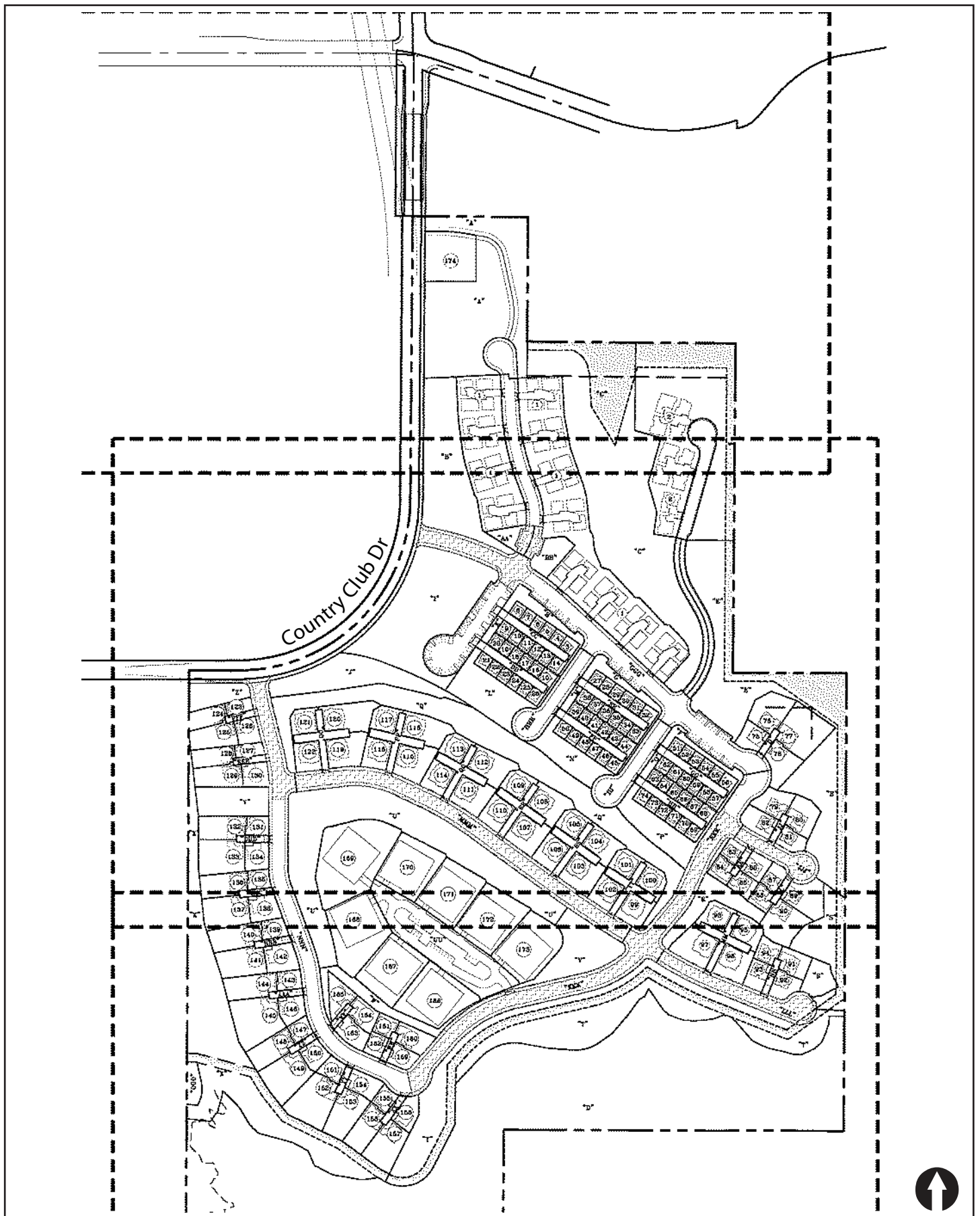
Market conditions, funding for public facilities, and similar conditions beyond the control of the developer would drive the overall implementation period. Nonetheless, an overall approach to

phasing has been designed that would ensure a logical and orderly expansion of roadways, public utilities, and infrastructure. The first phase would involve overall site grading. Infrastructure installation would follow, and the final phase(s) would consist of “vertical” development of the project. All neighborhoods are planned such that they could be built simultaneously.

Access is proposed along Country Club Drive between Harmony Grove Road and Cordrey Drive. The Project proposes to improve Country Club Drive along the Project frontage to a “Public Enhanced Residential Collector”. This will include a ten-foot multi-use trail on the west side of the road, a ten-foot parkway, two eight-foot shoulders, two twelve-foot travel lanes and a 14-center turn lane/stripped median. The existing bridge will also be rebuilt and improved. A five-foot parkway and a five-foot pathway are proposed on the east side of the road. Three approach lanes at the Country Club Drive/ Harmony Grove Road intersection are also proposed. The Project is designed to accommodate a system of interconnected trails and pathways that encourage pedestrian and bicycle activity and establish important links to Harmony Grove Village, the Del Dios Highlands Preserve, and the Elfin Forest Recreational Reserve. The intersection improvements and proposed changes to Country Club Drive are designed to enhance circulation for pedestrians, bicyclists, and equestrian riders. Crosswalks, clear delineations between vehicular routes and pedestrian/equestrian/bicyclist routes, and pedestrian and equestrian-level push buttons would be provided. Internal private roadways servicing the Project will include pedestrian trails and sharrows to indicate that bicyclists share the roadway with vehicles. Further details on Project access are provided in *Section 11.0*.

The project application includes a General Plan Amendment (GPA), a Specific Plan, a Tentative Map; a Re-zone; and a Major Use Permit for the Water Reclamation Facility. Additional discretionary permits will be needed to implement the Project, as identified in the Specific Plan.

Figure 2–1 shows the conceptual site plan for the Project.



3.0 EXISTING CONDITIONS

3.1 Study Area

The study area was based on the criteria identified in the County of San Diego's *Report Format & Content Requirements: Transportation & Traffic*, August 24, 2011. According to the County's criteria, "the scope of the full direct and cumulative traffic assessment shall include those [*Mobility Element*] roads and intersections that will receive 25 peak hour trips (two-way peak hour total)." In addition, the County criteria states that a full traffic impact study should include all regional arterials (including all State surface routes), intersections, and mainline freeway locations where the proposed project will add 50 or more peak hour trips to the existing roadway traffic.

Based on these criteria, the following intersections and segments are included in the study area and are listed below.

Intersections

City of Escondido Jurisdiction

1. Nordahl Road / State Route 78 (SR 78) Westbound Ramps
2. Nordahl Road / State Route 78 (SR 78) Eastbound Ramps
3. Auto Park Way / Mission Road
4. Auto Park Way / Country Club Drive
5. Harmony Grove Road / Enterprise Street
6. Avenida Del Diablo / Citracado Parkway
7. Valley Parkway / I-15 Northbound Ramps
8. Valley Parkway / I-15 Southbound Ramps
9. Valley Parkway / Auto Park Way
10. Valley Parkway / 9th Avenue
11. Valley Parkway / 11th Avenue
12. Valley Parkway / Citracado Parkway
13. Auto Park Way / I-15 Southbound Ramps
14. 9th Avenue / I-15 Northbound Ramps

County of San Diego Jurisdiction

15. Country Club Drive / Kauana Loa Drive
16. Country Club Drive / Harmony Grove Village Parkway
17. Country Club Drive / Harmony Grove Road
18. Harmony Grove Road / Kauana Loa Drive
19. Harmony Grove Road / Harmony Grove Village Parkway

Street Segments

City of Escondido Jurisdiction

Auto Park Way

1. Mission Road to Country Club Drive

Citracado Parkway

2. Avenida Del Diablo to Valley Parkway

Valley Parkway

3. 11th Avenue to Citracado Parkway
4. Auto Park Way to the I-15 Southbound Ramps

9th Avenue

5. W. Valley Parkway to Auto Park Way

Country Club Drive

6. Auto Park Way to Hill Valley Drive

County of San Diego Jurisdiction

Country Club Drive

7. Hill Valley Drive to Kauana Loa Drive
8. Kauana Loa Drive to Harmony Grove Village Parkway
9. Harmony Grove Village Parkway to Harmony Grove Road

Harmony Grove Road

10. Wilgen Drive to Country Club Drive
11. Country Club Drive to Harmony Grove Village Parkway
12. Harmony Grove Village Parkway to Kauana Loa Drive
13. Kauana Loa Drive to Enterprise Street (*County and City*)

Harmony Grove Village Parkway

14. Harmony Grove Road to Citracado Parkway

Freeway Mainline Segments

State Route 78

1. West of Nordahl Road
2. East of Nordahl Road

3.2 Existing Transportation Conditions

The following is a description of the nearby roadway network including projections of capacity based on average daily traffic (ADT):

Auto Park Way is classified as a Six-Lane Super Major Road in the City of Escondido *General Plan Mobility Element* with a buildout LOS E capacity of 50,000 ADT. From Mission Road to Meyer Avenue, Auto Park Way is currently constructed as a six-lane divided roadway. From Meyer Avenue to Country Club Drive, it is currently built as a four-lane divided roadway. Therefore, the average carrying capacity between a six-lane and four-lane roadway of 43,500 ADT was used in the existing and near-term analysis. Bicycle lanes and sidewalks are provided on both sides of the roadway. Curbside parking is not allowed and the posted speed limit is 40 mph.

Citracado Parkway is classified as a Four-Lane Major Road in the City of Escondido *General Plan Mobility Element* with a buildout LOS E capacity of 37,000 ADT. From Avenida Del Diablo to W. Valley Parkway, Citracado Parkway is currently built as a two-lane roadway including a wide, landscaped median with an existing LOS E capacity of 10,000 ADT. The posted speed limit is 40 mph. There are no bike lanes or bus stops on this portion of the roadway. Additional information on improvements to Citracado Parkway recently completed by the Harmony Grove Village project is provided in *Section 3.2.1* below.

W. Valley Parkway is classified as a Four-Lane Major Road from Citracado Parkway to Auto Park Way in the City of Escondido *General Plan Mobility Element* with an LOS E capacity of 37,000 ADT and as a Six-Lane Major Road from Auto Park Way to the I-15 Ramps with an LOS E capacity of 50,000. Between 11th Avenue and Auto Park Way, W. Valley Parkway is currently built as a four-lane divided roadway with a raised landscaped median, curb, gutter and sidewalks with an existing LOS E capacity of 37,000 ADT. Bike lanes are provided intermittently along both sides of the roadway and parking is not permitted. The posted speed limit is between 45-50 mph. From Auto Park Way to the I-15 Southbound Ramps, W. Valley Parkway is built as an eight-lane divided roadway with an existing LOS E capacity of 70,000 ADT, exceeding its *Mobility Element* classification. The existing eight-lane capacity was used in all analysis scenarios.

9th Avenue is classified as a Four-Lane Collector in the City of Escondido *General Plan Circulation Element* with an LOS E capacity of 34,200 ADT. From Valley Parkway to Auto Park Way, 9th Avenue is currently built as a 60-foot wide two-lane roadway with a continuous two-way left-turn lane. Therefore, a carrying capacity of 15,000 ADT was used in the existing and near-term analysis. The posted speed limit is 35 mph. Curbside parking is permitted and there are no bike lanes or bus stops.

Country Club Drive is classified as a Two-Lane Local Collector in the City of Escondido *General Plan Mobility Element* from Auto Park Way to Hill Valley Drive with an LOS E capacity of 10,000 ADT and is currently built as a two lane undivided roadway. Starting at the industrial development approximately 0.25 miles west of Auto Park Way, frontage improvements have been completed to widen the southbound lane and to provide a sidewalk on the west side of the roadway

allowing for curbside parking. No curbs, gutters or sidewalks are provided and parking is not permitted on the east side of the roadway. The posted speed limit is 45 mph. A carrying capacity of 10,000 ADT was used in all analysis scenarios.

Country Club Drive is an unclassified roadway in the County of San Diego *General Plan Mobility Element* from Hill Valley Drive to Hillside Road. It is currently built as a two-lane undivided roadway from Hill Valley Drive to Kauana Loa Drive with minimal shoulders and a 45 mph speed limit. Based on these roadway characteristics, it currently functions as a 2.2F Light Collector with an LOS E capacity of 9,700 ADT.

See *Section 3.2.1* below for further descriptions of Country Club Drive from Kauana Loa Drive to Harmony Grove Road.

Harmony Grove Road is classified as a 2.2E Light Collector from Wilgen Drive to Country Club Drive with an LOS E capacity of 16,200 ADT and as a 2.2B Light Collector with a Continuous Turn Lane from Country Club Drive to Kauana Loa Drive with an LOS E capacity of 19,000 ADT in the County of San Diego *General Plan Mobility Element*. For more details on the existing conditions of Harmony Grove Road within the County's jurisdiction, see *Section 3.2.1* provided below.

From Kauana Loa Drive to Enterprise Street, Harmony Grove Road is an unclassified roadway in both the County's *Mobility Element* and the City of Escondido's *General Plan Mobility Element*. It is currently built as a two-lane undivided roadway with capacity improvements along the industrial frontage approaching Enterprise Street where curb, gutter and sidewalks are provided. The posted speed limit is 40 mph. The roadway crosses into both the County and City's jurisdiction. However, the majority of the roadway abuts the County line. Given these roadway characteristics, this portion of Harmony Grove Road currently functions as a 2.2F Light Collector with an LOS E capacity of 9,700 ADT. This capacity was used in all analysis scenarios.

Harmony Grove Village Parkway See *Section 3.2.1* below.

State Route 78 (SR 78) is generally a six-lane east/west freeway. Additional auxiliary lanes are provided at the Nordahl Road interchange and at the Interstate 15 junction. Ramp meters are provided at the Nordahl Road on-ramps. According to the *Caltrans Guidelines for the Preparation of Traffic Impact Studies, December 2002*, a capacity of 2,000 vehicles per hour (vph) was used for mainline operations with 1,200 vph per lane for auxiliary lanes.

3.2.1 *Harmony Grove Village Network Conditions*

The Harmony Grove Village project located north of Harmony Grove Road and bound by Country Club Drive and Wilgen Road is currently under construction. The development footprint has been largely graded, homes are being constructed throughout the site, a Water Reclamation Facility that will serve HGV has been completed, roadways are being installed and homes have been available for sale since May 2015. The project is developing as a rural residential community with a small community/commercial core. The project includes the development of 710 residential single-family units, 32 live/work lofts with 16,500 square-feet of retail, a 25,000-square foot village core, an

equestrian park, public and private parks, an institutional site (assumed to be a tack and feed store), and a fire station.

As part of the Harmony Grove Village project, and as of 2016, a new road named Harmony Grove Village Parkway has been constructed to connect Country Club Drive to the southern extension of Citracado Parkway. From Country Club Drive to Harmony Grove Road, Harmony Grove Village Parkway is being constructed to provide a graded width of 74 feet with a paved width of 54 feet including curb, gutter and sidewalks for an LOS E capacity of 19,000 ADT. East of Harmony Grove Road to Citracado Parkway, it has been constructed to a graded width of 60 feet with a paved width of 40 feet including curb, gutter and sidewalks for an LOS E capacity of 16,200 ADT. Harmony Grove Village Parkway is identified in the County of San Diego *General Plan Mobility Element* by its previous name of “Lariat Drive” and is ultimately classified as a 2.1C Community Collector with Intermittent Turn Lanes for an LOS E capacity of 19,000 ADT.

Citracado Parkway has been extended northward from its prior terminus at Avenida Del Diablo for a short distance to intersect the new Harmony Grove Village Parkway roadway. Left-turning movements at the Avenida Del Diablo intersection with Citracado Parkway are being restricted in the southbound, eastbound and westbound directions. In addition, the east/west movements on Avenida Del Diablo are right-turn only.

Within the study area, Country Club Drive from Kauana Loa Drive to the northerly boundary of Harmony Grove Village has been improved to modified Rural Light Collector standards per the previously adopted General Plan (corresponding with a 2.2F Light Collector on the currently adopted General Plan) with an ADT capacity of 9,700 ADT. South of the Harmony Grove Village Project boundary to Harmony Grove Village Parkway, Country Club Drive has been improved to Rural Collector standards per the previously adopted General Plan (corresponding to 2.2E Light Collector on the currently adopted General Plan) with an ADT capacity of 16,200. For the purposes of being conservative, the 9,700 ADT capacity was used in the buildout assessment.

Harmony Grove Road has been improved from Wilgen Road to Country Club Drive to a graded width of 74 feet and a paved width of 54 feet with curb and gutters for an LOS E capacity of 19,000 ADT. Although the County of San Diego *General Plan Mobility Element*, classifies this segment as a 2.2E Light Collector with an LOS E capacity of 16,200 ADT, because the roadway has been improved to 2.2C Light Collector standards (19,000 ADT), this capacity was used in all near-term and buildout analyses.

From Country Club Drive to Harmony Grove Village Parkway, Harmony Grove Road is being improved to provide a graded width of 36 feet with a paved width of 28 feet. Built to these standards, the roadway will function as a modified Rural Light Collector with an LOS E capacity of 16,200 ADT.

In addition, traffic signals are being installed at the Harmony Grove Road/ Harmony Grove Village Parkway intersection and the Harmony Grove Road/ Country Club Drive intersection.

As noted, these roadway improvements are completed, with one improvement currently under construction. As a result, all of these improvements are expected to be completed prior to opening day of the proposed Project. Thus, they were included in the existing street network assumptions. **Appendix A** contains a copy of the Harmony Grove Village Conditions of Approval (COA), which defined several improvements discussed above.

Figure 3-1 depicts the Existing traffic conditions and the study area intersections and segments graphically.

3.3 Existing Traffic Volumes

Weekday AM/PM peak hour intersection turning movement and 24-hour bi-directional daily traffic counts were conducted in February and June of 2014 when schools were in session. The peak hour counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM.

Freeway volumes were taken from the most recent Caltrans Performance Measurement System (PeMS) data. The PeMS software distributes real-time peak hour and average daily traffic volumes and provides a graphical representation of volumes at each PeMS station location. Peak hour freeway volume data was obtained, where available. Average daily freeway volumes were taken from the most recent Caltrans ADT data.

3.3.1 Harmony Grove Village Traffic Volumes

As stated in *Section 3.2.1*, the Harmony Grove Village project is currently under construction. Since development of this project is currently underway, homes have already been sold and some units are now occupied, it was determined that the total traffic generated by this project would be on the street system prior to the opening day of the proposed Project, and therefore is included under existing baseline conditions. (Pursuant to its entitlement documents, completion of this project was originally anticipated for 2008.)

The trip assignment taken from the Harmony Grove Village Final Environmental Impact Report (EIR) was added to the existing 2014 traffic data to arrive at the final existing traffic volume conditions.

Table 3-1 is a summary of the most recent available average daily traffic volumes (ADTs). **Appendix B** contains the manual count sheets and the freeway mainline traffic data as well as a copy of the project assignment for Harmony Grove Village.

Figure 3-2 depicts the *Existing* peak hour intersection turning movement and 24-hour segment volumes at the study area intersections and segments.

TABLE 3-1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT ^a	Jurisdiction
Auto Park Way		
1. Mission Road to Country Club Drive	26,110	Escondido
Citracado Parkway		
2. Avenida Del Diablo to W. Valley Parkway	6,170	Escondido
Valley Parkway		
3. 11 th Avenue to Citracado Parkway	24,110	Escondido
4. Auto Park Way to I-15 SB Ramps	37,280	Escondido
9th Avenue ^b		
5. W. Valley Parkway to Auto Park Way	11,630	Escondido
Country Club Drive		
6. Auto Park Way to Hill Valley Drive	6,490	Escondido
Country Club Drive ^c		
7. Hill Valley Drive to Kauana Loa Drive	5,980	County
8. Kauana Loa Drive to Harmony Grove Village Parkway	3,260	County
9. Harmony Grove Village Parkway to Harmony Grove Road	2,430	County
Harmony Grove Road ^c		
10. Wilgen Drive to Country Club Drive	8,370	County
11. Country Club Drive to Harmony Grove Village Parkway	7,510	County
12. Harmony Grove Village Parkway to Kauana Loa Drive	5,890	County
13. Kauana Loa Drive to Enterprise Street	7,310	County/ Escondido
Harmony Grove Village Parkway ^c		
14. Harmony Grove Road to Citracado Parkway	8,220	County
Freeway Mainline Segment	ADT ^a	Jurisdiction
1. State Route 78 West of Nordahl Road	159,000	Caltrans
2. State Route 78 East of Nordahl Road	164,000	Caltrans

Footnotes:

- a. Average Daily Traffic Volumes collected February and June of 2014 when schools were in session. Caltrans volumes taken from most recent available data.
- b. 9th Avenue provides a paved width of 60 feet with a 12-foot center turn lane and 24-foot travel lanes in each direction (8-foot parking lane plus 16' travel lane). Therefore, a capacity of 15,000 ADT was used in the analysis.
- c. Country Club Drive from Harmony Grove Village Parkway to Harmony Grove Road and Harmony Grove Village Parkway from Harmony Grove Road to Citracado Parkway were under construction at the time of data collection. With the construction of Harmony Grove Village and the new roadways in the area, the existing counts were adjusted to account for the rerouting of existing traffic and to incorporate the projected trips generated by the Harmony Grove Village project. Therefore, portions of Country Club Drive, Harmony Grove Road, and Harmony Grove Village Parkway were adjusted to include the rerouting of existing traffic with the addition of Harmony Grove Village project volumes.

4.0 ANALYSIS APPROACH AND METHODOLOGY

4.1 Analysis Approach

The “With Project” conditions analyze the increase in traffic due to the development of these 453 single-family homes on 111 acres. As noted earlier in this report, since the preparation of this traffic study, the Project site plan has changed to increase the number of proposed units from 450 residential DU to 453 DU. The analysis provided in this report was conducted using the 450 DU amount. With an increase of three (3) units, the additional 30 ADT with 2 AM peak hour and 3 PM peak hour trips generated would have a nominal effect on the analysis and would not change the conclusions of significance presented in this report.

Table 4–1 lists the scenarios analyzed in this report.

TABLE 4–1
ANALYSIS SCENARIOS

Scenario
<i>Existing & Near-Term Conditions</i>
▪ Existing ▪ Existing + Project ▪ Existing + Cumulative Projects ▪ Existing + Project + Cumulative Projects
<i>Buildout Condition</i>
▪ Buildout Without Project (<i>General Plan</i> Land Use) ▪ Buildout With Project (Proposed <i>General Plan</i> Amendment Land Use)

Existing conditions represent the existing on-the-ground network and traffic volume conditions. As previously mentioned in *Section 3.2.1* and *3.3.1*, the Harmony Grove Village project is currently under construction and homes have been sold and occupied. As part of the project, Country Club Drive is being improved from Kauana Loa Drive south along the Harmony Grove Village project frontage. Also, the construction of the new Harmony Grove Village Parkway roadway is currently in progress which will result in a rerouting of existing traffic from Kauana Loa Drive to this new roadway. These improvements are expected to be completed prior to opening day of the proposed Project. It was therefore determined that traffic volumes projected to be generated by the Harmony Grove Village project should be included under existing traffic conditions.

Existing + Project conditions represent the operations of the existing street network described above with the addition of the total traffic generated by 450 dwelling units. No proposed improvements to the Project frontage roads and access intersection of Country Club Drive/ Harmony Grove Road

were included in the analysis for purposes of being conservative. *Section 11.0* discusses the access improvements in further detail.

Existing + Project + Cumulative Projects conditions represent the time period in the near future when traffic generated by the total Project would be on the street system and when it would be expected that other nearby development or infrastructure projects would contribute to cumulative growth in the area increasing the overall study area traffic volumes. *Section 8.0* discusses the cumulative conditions in greater detail.

Buildout Without Project (General Plan Land Use) conditions represent the forecasted traffic volume and network conditions at buildout of the County and City *General Plan* land use designations. According to the *General Plan*, 222 DU would be accommodated within the Project site based on the current zoning (SR-0.5 with minimum lot sizes of 0.5 to 1 acre). The traffic volumes generated by 222 DU were included in the County's buildout traffic model. *Section 10.0* provides more information on the Buildout assumptions.

Buildout With Project (Proposed Land Use) conditions represent the forecasted traffic volume and network conditions at buildout of the County and City *General Plan* land use designations with the exception of the Project site requiring a *General Plan* Amendment to increase the allowable land use intensity. The net increase in traffic volumes with this change (450 DU less 222 DU) was added to the baseline Buildout conditions. *Section 10.0* provides more information on the Buildout assumptions.

4.2 Methodology

LOS is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS designation is reported differently for signalized intersections, unsignalized intersections, and roadway segments.

4.3 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *2000 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 7.0) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS. A more detailed explanation of the methodology is attached in **Appendix C**.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based upon the procedures found in Chapter 17 of the *HCM*, with the assistance of the *Synchro* (version 7.0) computer software. A more detailed explanation of the methodology is attached in **Appendix C**.

4.4 Street Segments

Street segment analysis is based upon the comparison of ADTs to the County of San Diego and City of Escondido *Roadway Classification, Level of Service, and ADT Tables*, depending on which jurisdiction the street segment is located within. These tables provide segment capacities for different street classifications, based on traffic volumes and roadway characteristics. Copies of the County of San Diego and City of Escondido capacity tables are attached in **Appendix D**.

4.5 Freeway Segments

Freeway segments were analyzed during the AM and PM peak hours based on the methodologies as outlined in the SANTEC/ITE Guidelines developed by Caltrans. The freeway segments LOS is based on a Volume to Capacity (V/C) method. Page 5 of Caltrans' *Guide for the Preparation of Traffic Impact Studies*, December 2002 documents a maximum service flow rate of 2,000 passenger cars per hour per lane. The freeway segments were analyzed using the existing mainline lane conditions at the location where PeMS data was collected. The freeway LOS operations are summarized below in **Table 4-2**.

TABLE 4-2
CALTRANS DISTRICT 11
FREEWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LOS	V/C	Congestion/Delay	Traffic Description
<i>USED FOR FREEWAYS, EXPRESSWAYS AND CONVENTIONAL HIGHWAYS</i>			
A	<0.41	None	Free flow
B	0.42-0.62	None	Free to stable flow, light to moderate volumes.
C	0.63-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.81-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
E	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
<i>USED FOR FREEWAYS AND EXPRESSWAYS</i>			
F(0)	1.01-1.25	Considerable: 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
F(1)	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
F(2)	1.36-1.45	Very Severe: 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
F(3)	>1.46	Extremely Severe: 3+ hours of delay	Gridlock

5.0 SIGNIFICANCE CRITERIA

The following criteria were used to evaluate potential significant impacts, based on the County's document, *Guidelines for Determining Significance*, August 24, 2011, for study area locations within the County of San Diego. For study area intersections and segments located in the City of Escondido, the City of Escondido's *Traffic Impact Analysis Guidelines* (2014) were used.

5.1 County of San Diego

5.1.1 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections. **Table 5–1** summarizes significant project impacts for signalized and unsignalized intersections.

TABLE 5–1
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON INTERSECTIONS
ALLOWABLE INCREASES ON CONGESTED INTERSECTIONS

Level of service	Signalized	Unsignalized
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement

General Notes:

1. A critical movement is an intersection movement (right-turn, left-turn, or through-movement) that experiences excessive queues, which typically operate at LOS F.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
4. For determining significance at signalized intersections with LOS F conditions, the analysis must evaluate both the delay **and** the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

Signalized Intersections—Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or LOS traffic impact on a signalized intersection:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in *Table 5–1*.
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance, or other factors, the project would significantly impact the operations of the intersection.

Unsignalized Intersections—the operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic impact on an unsignalized intersection as listed in *Table 5–1* and described as text below:

- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance, or other factors, the project would significantly impact the operations of the intersection.

Using County of San Diego guidelines, impacts calculated in the Existing + Project scenario are considered “direct” and impacts calculated in the Existing + Project + Cumulative Projects time frame are considered “cumulative”.

5.1.2 *Street Segments*

Pursuant to the County’s *General Plan Mobility Element*, new development must provide improvements or other measures to mitigate traffic impacts to avoid:

- a. Reduction in LOS below “C” for on-site Mobility Element roads;
- b. Reduction in LOS below “D” for off-site and on-site abutting *Mobility Element* roads; and
- c. "Significantly impacting congestion" on roads that operate at LOS “E” or “F”. If impacts cannot be mitigated, the project cannot be approved unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The *Mobility Element*, however, does not include specific guidelines for determining the amount of additional traffic that would “significantly impact congestion" on such roads.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would “significantly impact congestion” on the referenced LOS E and F roads. The guidelines are summarized in **Table 5–2**. The thresholds in *Table 5–2* are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

TABLE 5–2
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON
MOBILITY ELEMENT ROAD SEGMENTS
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS

Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

General Notes:

1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project’s traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

Mobility Element Roads— ME Policy 2.1 addresses *Mobility Element* roads. It states that development projects are required “to provide associated road improvements necessary to achieve a level of service of “D” or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County pursuant to the criteria specifically identified in the accompanying text box (Criteria for Accepting a Road Classification with Level of Service E/F).”

The following significance guidelines define a method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will “significantly impact congestion” on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or LOS impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Mobility Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Mobility Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in *Table 5–2*, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

5.2 City of Escondido

The City of Escondido utilizes the San Diego Traffic Engineer's Council and the San Diego Chapter of the Institute of Transportation Engineers (SANTEC/ITE) guidelines in determining levels of significance. In accordance with "SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region", the following thresholds shall be used to identify significant traffic impacts under any scenario. Based on SANTEC/ITE guidelines, if now or in the future, the project's traffic impact causes the values in **Table 5-3** below to be exceeded in a roadway segment or an intersection that is operating at LOS D or worse, it is determined to be a significant impact and the project shall identify mitigation measures.

TABLE 5-3
CITY OF ESCONDIDO TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service With Project	Allowable Change due to Project Impact		
	Roadway Segments		Intersections
	V/C	Speed Reduction (mph)	Delay (sec.)
D, E, or F	0.02	1.0	2.0

General Notes:

1. No Significant Impact occurs at areas in GP Downtown Specific Plan that operate at LOS "D" or better.
2. Mitigation measures should also be considered for any segment or intersection operating on LOS "F" subject to less than significant impact.

5.3 Caltrans

5.3.1 Freeway Segments

Caltrans' *Guide for the Preparation of Traffic Impact Studies*, December 2002, outlines recommended procedures for traffic study contents but does not identify specific traffic impact thresholds. Caltrans staff has indicated that there is a desire to maintain freeway operations between LOS C and D levels. Specific traffic impact thresholds are typically identified by local Caltrans staff. For the San Diego region, the SANTEC/ITE *Guidelines for Traffic Impact Studies in the San Diego Region*, March 2000, document was used for the determination of the significance of impacts for the freeway mainlines. The defined thresholds are shown in **Table 5-4** below for freeway segments.

TABLE 5-1
SANTEC/ITE TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project ^a	Allowable Increase Due to Project Impacts ^b	
	Freeways	
	V/C	Speed (mph)
E & F	0.01	1

Source: SANTEC/ITE *Guidelines for Traffic Impact Studies in the San Diego Region*, March 2, 2000.

Footnotes:

- All level of service measurements are based upon HCM procedures for peak-hour conditions. The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions).
- If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant.

General Notes:

- V/C = Volume to Capacity Ratio
- Speed = Arterial speed measured in miles per hour

6.0 ANALYSIS OF EXISTING CONDITIONS

The criteria used for determining unacceptable operations are subject to each jurisdiction's standards, as discussed in *Section 5.0* of this report. County of San Diego intersection and street segment operations are considered unacceptable at LOS E or F. The City of Escondido considers LOS D the threshold for unacceptable operations. Caltrans' criteria indicates freeway segments operating at LOS E or worse are unacceptable operations. The following section summarizes the existing analysis of study area locations.

6.1 Peak Hour Intersection Levels of Service

Table 6–1 summarizes the existing intersections LOS. As seen in *Table 6–1*, all intersections are calculated to currently operate at acceptable levels of service.

Appendix E contains the existing intersection analysis worksheets.

6.2 Daily Street Segment Operations

Table 6–2 summarizes the existing roadway segment operations. As seen in *Table 6–2*, all study area segments are calculated to currently operate at acceptable levels of service, except the following:

City of Escondido

- Segment #5. 9th Avenue between Valley Parkway and Auto Park Way – LOS D

6.3 Freeway Mainline Operations

Table 6–3 summarizes the existing freeway mainline operations on SR 78. As seen in *Table 6–3*, the eastbound and westbound segments of SR 78 east and west of Nordahl Road currently operate at acceptable levels during both the AM and PM peak hours except for the following:

- Mainline #1. SR 78 Westbound, west of Nordahl Road: LOS E/E during the AM/PM peak hours

TABLE 6-1
EXISTING INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing	
				Delay ^a	LOS ^b
1. Nordahl Rd / SR 78 WB Ramps	City	Signal	AM PM	22.4 25.2	C C
2. Nordahl Rd / SR 78 EB Ramps	City	Signal	AM PM	21.6 20.4	C C
3. Auto Park Way / Mission Rd	City	Signal	AM PM	32.1 33.7	C C
4. Auto Park Way / Country Club Dr	City	Signal	AM PM	16.8 17.5	B B
5. Harmony Grove Road / Enterprise St	City	Signal	AM PM	13.1 14.8	B B
6. Avenida Del Diablo / Citracado Pkwy	City	Signal	AM PM	10.0 9.5	B A
7. Valley Pkwy / I-15 NB Ramps	City	Signal	AM PM	26.5 35.1	C D
8. Valley Pkwy / I-15 SB Ramps	City	Signal	AM PM	31.1 32.7	C C
9. Valley Pkwy / Auto Park Way	City	Signal	AM PM	30.6 32.2	C C
10. Valley Pkwy / 9 th Ave	City	Signal	AM PM	26.6 36.2	C C
11. Valley Pkwy / 11 th Ave	City	Signal	AM PM	16.1 14.2	B B
12. Valley Pkwy / Citracado Pkwy	City	Signal	AM PM	30.1 24.7	C C
13. Auto Park Way / I-15 SB Ramps	City	Signal	AM PM	17.7 24.1	B C
14. Auto Park Way / I-15 NB Ramps	City	Signal	AM PM	21.9 21.0	C C
(Continued on Next Page)					

TABLE 6-1
EXISTING INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing	
				Delay ^a	LOS ^b
(Continued from Previous Page)					
15. Country Club Dr / Kauana Loa Dr	County	AWSC ^c	AM	8.2	A
			PM	8.8	A
16. Country Club Dr / Harmony Grove Village Pkwy	County	AWSC	AM	8.9	A
			PM	10.3	B
17. Country Club Dr / Harmony Grove Rd ^e	County	Signal	AM	30.5	C
			PM	36.6	D
18. Harmony Grove Rd / Kauana Loa Dr	County	MSSC ^d	AM	12.0	B
			PM	15.2	C
19. Harmony Grove Rd / Harmony Grove Village Pkwy ^e	County	Signal	AM	24.2	C
			PM	20.9	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. AWSC – All-Way Stop Controlled intersection. Average delay reported.
- d. MSSC – Minor Street Stop Controlled intersection. Minor street left-turn delay is reported.
- e. Traffic signal installed per the Harmony Grove Village Conditions of Approval.

General Notes:

- 1. Jur. = Jurisdiction, City = City of Escondido

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 6-2
EXISTING STREET SEGMENT OPERATIONS

City of Escondido Street Segments	Currently Built As	Existing Capacity (LOS E) ^a	ADT ^b	LOS ^c	V/C ^d
Auto Park Way 1. Mission Rd to Country Club Dr ^e	4-Lane Divided	43,500	26,110	B	0.600
Citracado Parkway 2. Avenida Del Diablo to Valley Parkway	2-Lane Undivided	15,000	6,170	B	0.411
Valley Parkway 3. 11 th Ave to Citracado Parkway	4-Lane Divided	37,000	24,110	C	0.652
4. Auto Park Way to I-15 SB Ramps	8-Lane Divided	70,000	37,280	B	0.533
9th Avenue 5. Valley Pkwy to Auto Park Way	2-Lane Undivided	15,000	11,630	D	0.775
Country Club Drive 6. Auto Park Way to Hill Valley Dr	2-Lane Undivided	10,000	6,490	C	0.649
County of San Diego Street Segments	Currently Built As	Existing Capacity (LOS E) ^a	ADT ^b	LOS ^c	
Country Club Drive 7. Hill Valley Dr to Kauana Loa Dr ^f	2-Lane Undivided	9,700	5,980	B	
8. Kauana Loa Dr to Harmony Gr. Vill. Pkwy ^g	2-Lane Undivided	9,700	3,260	A	
9. Harmony Gr. Vill. Pkwy to Harmony Gr. Rd ^h	2-Lane Undivided	19,000	2,430	A	
Harmony Grove Road 10. Wilgen Dr to Country Club Dr ⁱ	2-Lane Undivided	19,000	8,370	C	
11. Country Club Dr to Harmony Gr. Vill. Pkwy ^j	2-Lane Undivided	16,200	7,510	D	
12. Harmony Gr. Vill. Pkwy to Kauana Loa Dr ^j	2-Lane Undivided	16,200	5,890	C	
13. Kauana Loa Dr to Enterprise St ^k	2-Lane Undivided	9,700	7,310	C	
Harmony Grove Village Parkway 14. Harmony Grove Rd to Citracado Pkwy ^l	2-Lane Undivided	16,200	8,220	D	
(Continued on Next Page)					

TABLE 6-2
EXISTING STREET SEGMENT OPERATIONS

(Continued from Previous Page)

Footnotes:

- a. Capacities based on City of Escondido and County of San Diego Roadway Classification Tables.
- b. Average Daily Traffic Volumes.
- c. Level of Service.
- d. Volume to Capacity ratio.
- e. Auto Park Way is currently built as a 6-Ln Major from Mission Road to Meyers Avenue and a 4-Ln Major from Meyers Avenue to Country Club Drive. Therefore, a 5-Ln Major road capacity of 43,500 was used in the analysis.
- f. Although Country Club Drive is not a Mobility Element roadway, due to the increased paved width and 45 mph speed limit and reduced shoulder, the roadway functions as a 2.2F Light Collector with an LOS "E" capacity of 9,700 ADT.
- g. Country Club Drive from Kauana Loa Drive to the northerly boundary of Harmony Grove Village is currently being improved to modified Rural Light Collector standards per the previously adopted General Plan (corresponding with a 2.2F Light Collector on the currently adopted General Plan) with an ADT capacity of 9,700. South of the Harmony Grove Village Project boundary to Harmony Grove Village Parkway, Country Club Drive is being improved to Rural Collector standards per the previously adopted General Plan (corresponding with 2.2E Light Collector on the currently adopted General Plan) with an ADT capacity of 16,200. For purposes of being conservative, the 9,700 ADT capacity was used in the analysis.
- h. From Harmony Grove Village Parkway to Harmony Grove Road, Country Club Drive is being improved to Town Collector standards per the previously adopted General Plan (corresponding with 2.1C Community Collector on the currently adopted General Plan) with an ADT capacity of 19,000.
- i. Harmony Grove Road from Wilgen Drive to Country Club Drive is currently being improved to 2.2C Light Collector standards with an ADT capacity of 19,000.
- j. Harmony Grove Road from Country Club Drive to Kauana Loa Drive functions as a Rural Light Collector with a LOS C capacity of 16,200 ADT.
- k. Harmony Grove Road from Kauana Loa Drive to Enterprise Street is currently built as a two-lane roadway with curb, gutter and sidewalk improvements for the majority of the roadway with a posted speed limit of 40 mph. The roadway is located in both the County and City's jurisdiction; however, the majority of the roadway abuts the County line. Therefore, an LOS E capacity of 9,700 ADT was used in the analysis.
- l. Harmony Grove Village Parkway is currently under construction to be built to 2.2E Light Collector standards with an ADT capacity of 19,000.

TABLE 6-3
EXISTING FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes ^a	Hourly Capacity ^b	Volume ^c	Peak Hour Volume ^d		V/C ^e		LOS ^f	
					AM	PM	AM	PM	AM	PM
State Route 78										
1. West of Nordahl Rd	EB	3M+1A	7,200	159,000	4,994	4,983	0.694	0.692	C	C
	WB	3M	6,000		5,862	5,625	0.977	0.938	E	E
2. East of Nordahl Rd	EB	3M+1A	7,200	164,000	4,144	5,097	0.576	0.708	B	C
	WB	4M+1A	9,200		5,663	5,070	0.616	0.551	B	B

Footnotes:

- a. Lane geometry taken from PeMS lane configurations at corresponding post miles including SR 78 recent improvements.
- b. Capacity calculated at 2000 vehicles per hour (vph) per lane for mainline lanes and 1200 vph for auxiliary lanes, from *Caltrans Guide for the Preparation of Traffic Impact Studies, Dec 2002*.
- c. Existing ADT volumes taken from most recent Caltrans traffic volumes.
- d. Peak hour volumes taken from most recent PeMS traffic volumes.
- e. V/C = (Peak Hour Volume/Hourly Capacity).
- f. LOS = Level of Service.

General Notes:

1. M = Mainline
2. A = Auxiliary

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

7.0 PROJECT TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

7.1 Project Trip Generation

Using the trip generation rates for the “single-family residential” land use type listed in the San Diego Association of Governments (SANDAG) *(Not So) Brief Guide of Vehicular Traffic Generation Rates*, April 2002, the 450-unit original Project is calculated to generate 4,500 ADT, with a total of 360 trips during the AM peak hour (108 inbound/ 252 outbound trips) and 450 total trips during PM peak hour (315 inbound/ 135 outbound). **Table 7-1** shows the forecast trip generation for the original Project at 450 dwelling units¹.

The Project description also includes a centrally located 2.5-acre “Commercial/Civic Zone” to implement the Neighborhood Commercial land use designation. The zone will accommodate a variety of civic land uses such as a park, overnight accommodations (up to 4 rooms for exclusive use by Harmony Grove Village South and Harmony Grove Village guests), a gym, an event lawn, and recreational facilities like a pool or clubhouse. The Commercial/Civic Zone will also include a small, public commercial component (5,000 square feet or less) with a minimum 1,500 square feet that will be devoted to commercial uses. This would include “specialty retail” uses to include food/beverage services, such as a café.

The intent of the zone is to foster walkability and serve as a community gathering place, which is supported by the easy access to regional multi-use trails and the proximate location to the planned Harmony Grove Village Equestrian Ranch. The land uses in the zone are community-serving, and any new weekday trips from outside the Project area would be offset by the mixed-use reduction that occurs as Project trips become on-site walk/bike trips or linked trips to the commercial uses.

Appendix F shows a comparison of Project trips between the analyzed Project (450 DU, no Commercial/Civic uses), and the current Project description (453 DU + Commercial/Civic uses). The table in *Appendix F* shows that former generates more traffic because it does not take into account the mixed-use reductions that would occur with a retail component. Therefore, the analysis and conclusions based on the 450 DU description are considered conservative.

Project phasing is not considered in the trip generation calculations. All analyses assume a worst-case 100% Project traffic effect.

7.2 Project Trip Distribution and Assignment

Project trip distribution was developed based on the distribution used for the adjacent Harmony Grove Village residential project including the proposed network improvements currently under construction. The Final Certified EIR for the Harmony Grove Village Project was approved by both the County of San Diego Board of Supervisors and City of Escondido. The Harmony Grove Village

¹ The current site plan shows an additional 3 units (453 DU) over the original 450 DU analyzed in this report. The additional 30 ADT (2 AM peak hour and 3 PM peak hour trips) would have a nominal effect on the analysis and would not change the conclusions of significance.

project utilized a SANDAG Select Zone Assignment which distributes trips in the area based on the location of residential and employment opportunities in the surrounding vicinity.

Generally, eight percent (8%) of trips were distributed to/from the southwest on Harmony Grove Road, 22% of trips were distributed to/from Country Club Drive in the north, and 70% were distributed to/from Harmony Grove Road in the northeast.

The proposed project could include the commercial/civic uses more particularly listed in the Project's Specific Plan document. The specific commercial retail tenant is not known at this time.

The Project will include a pedestrian oriented 5,000 square foot community center (Center House) which will contain a minimum of 1,500 square feet of commercial uses. The Center House is designed to feature a commercial use, such as a café, coffee shop, hair or nail salon, or day spa. The residents within the community would be able to visit the commercial business without generating additional primary vehicle trips. The Center House will also include such uses as a park, overnight accommodations of up to 4 rooms that can only be used by HGVS and HGV guests, a gym, an event lawn, and private recreational facilities like a pool or clubhouse that can be only be uses by HGVS. Other uses could include a day care center, administrative and professional services; business support services; convenience sales; cultural exhibits and library services; eating and drinking establishments; Farmer's Market; food and beverage retail sales; gym, exercise studio; open space and personal services such as a hair or nail salon, day spa. The Center House will act as a pedestrian-oriented place with amenities and services that encourage people from HGVS and the adjacent HGV to walk to by using the interconnected trails and pathways and serves as a destination gathering place for HGVS. By placing the residential units within one-half-mile of the commercial/civic uses, it will promote walking and cycling, and the related reduction of vehicular travel.

The nature of the commercial/civic uses would be to be locally serving, and the majority of trips would be expected to be pass-by or diverted trips already on the road for another purpose. As such, trips from outside of the Harmony Grove Villages area would not be expected to/from these uses in any meaningful way. Therefore the residential distribution discussed above adequately includes any trips associated with these non-residential uses.

Figure 7-1 shows the Project traffic distribution. **Figure 7-2** shows the assignment of Project trips. **Figure 7-3** shows the Existing + Project traffic volumes.

TABLE 7-1
PROJECT TRIP GENERATION

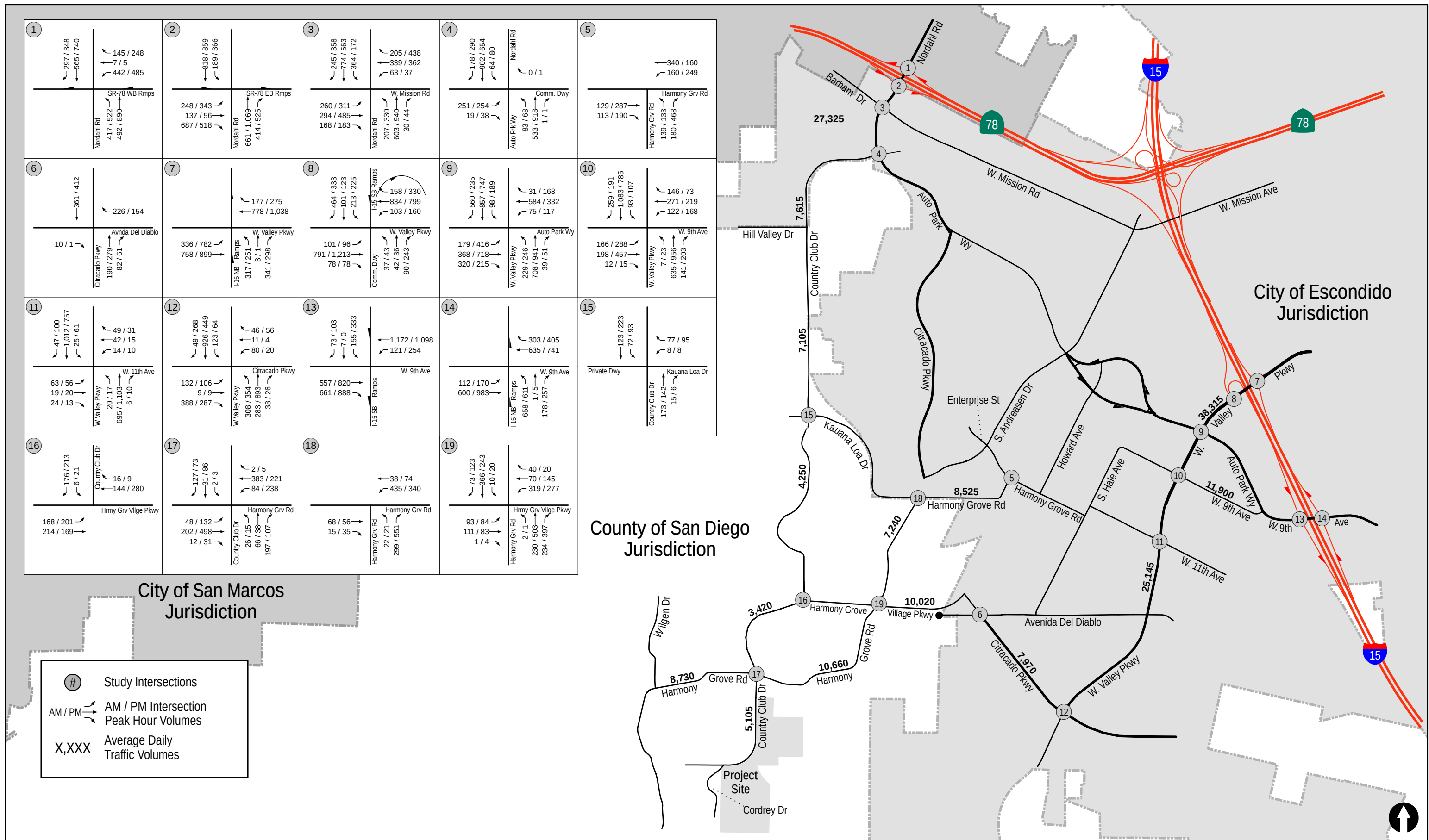
Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out	Volume			% of ADT	In:Out	Volume		
		Rate ^a	Volume		Split	In	Out	Total		Split	In	Out	Total
Single-Family Residential	450 ^b DU	10 /DU	4,500	8%	3:7	108	252	360	10%	7:3	315	135	450

Footnotes:

- a. Rate is based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.
- b. With the proposed increase in units to 453 DU since the preparation of this traffic study analysis, an additional 30 ADT with 2 AM (1 inbound/ 1 outbound) and 3 PM (2 inbound/ 1 outbound) peak hour trips would be generated. With the addition of these trips, no change the conclusions of significance presented in this report would occur.

General Notes:

1. ADT = Average daily traffic, rounded to the nearest tenth.
2. DU = Dwelling Units
3. See *Appendix F* for the trip generation calculations including the commercial/civic land uses and associated mixed-use reductions.



8.0 EXISTING + CUMULATIVE PROJECTS CONDITIONS

8.1 Summary of Cumulative Projects

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. Based on research conducted for the cumulative condition, two (2) County of San Diego projects, 31 City of San Marcos projects, and five (5) City of Escondido projects were identified for inclusion in the traffic study. The following is a brief description of each of the cumulative projects in the general vicinity of the Project.

COUNTY OF SAN DIEGO

1. **Valiano** is a 334-unit residential development located west of Country Club Drive and south of Hill Valley Road in the County of San Diego, adjacent to the cities of San Marcos and Escondido.
2. **Harmony Grove Industrial Park** is a 13.53-acre industrial development located at the Enterprise Street / Andreasen Drive intersection.

CITY OF SAN MARCOS

1. **University District Specific Plan** – The 194 acre proposed project is located on Twin Oaks Valley Road, north of Discovery Street. The project proposes 1,000,000 square feet of commercial, 938,000 square feet of office space, 2,600 units of mixed-use residential, 800 units of student housing, and 450 hotel rooms.
2. **Palomar Station** is a proposed mixed-use developed that consists of 333 residential units, 55,260 square feet of commercial, and 9,800 square feet of office space. The project is located on Las Posas Road both north and south of Armorlite Drive.
3. **San Marcos Creek District Specific Plan** is a proposed mixed-use development that consists of 2,300 residential units, 1.3 million square feet of commercial, and 589,000 square feet of office space. The project is located on San Marcos Boulevard between Via Vera Cruz and SR 78.
4. **Rancho Santalina** is a 237-unit residential development located north of Las Flores Drive and South Santa Fe Road.
5. **San Elijo Hills** is a specific plan area that consists of 3,398 residential units, 97,000 square feet of commercial, 100,000 square feet of office space, 1,050 acres of open space and 59 acres for elementary school use. The project is located near the intersection of San Elijo Hills and Elfin Forest Road.
6. **Marketplace @ Twin Oaks** is a proposed mixed-use development that consists of a 168,419 square foot shopping center, a 2-story and a 3-story office building. The project is located

near the southwest corner of the intersection of Twin Oaks Valley Road and San Marcos Boulevard.

7. **University of St. Augustine** is a proposed physical therapy graduate school consisting of 77,500 square feet in Phase 1 and 44,000 square feet in Phase 2. The project is located at 700 Windy Point Drive.
8. **Pacific Industrial No.1** is a proposed 22,160 square foot industrial building. The project is located on Pacific Street, north of Grand Avenue.
9. **Old Creek Ranch** is a proposed development consisting of 401 single-family homes, 1,123 multifamily homes, 103 acres light industrial and 181 acres of open space on 416 total acres. The project is located on San Elijo Road east of Rancho Santa Fe Road.
10. **Kachay Homes** is a proposed development consisting of 8 single-family homes on a one-acre lot subdivision. The project is located on the southeast corner of Richland and Mulberry Road.
11. **Kaiser Hospital Medical Office** is a 3-story, 70,667 square foot outpatient medical office building and 335 parking stalls. The project is located at 400 Craven Road.
12. **Westlake Village** is a proposed mixed-use development containing 105 residential units and 5,000 square feet of commercial space located on Autumn Drive.
13. **Heritage Ranch** is an approved 16 unit residential development on Richland Road.
14. **East Gate** proposes a mixed-use development of 42 multi-family affordable housing units and 11,285 SF of retail/commercial. The site is located on the northwest corner of Grand Avenue and Future Creekside Road.
15. **Campus Pointe II** proposed to construct 108 residential units and 10,000 SF of retail space (previously approved as “The Quorum”). The grading phase was underway as of June 2012 with the residential portion under construction.
16. **Davia Village (Milano Holdings, Inc.)** proposes a mixed-use project of 3-stories, 368 residential apartments, 19,855 SF of commercial/retail, and 8,895 SF of live/work units. The project is located at 1001 Armorlite Drive.
17. **Windy Point Development** is four proposed light industrial buildings and three office buildings on Borden Road at the extension of Windy Way. An application has been submitted to modify the industrial buildings to an office park.

18. **Parkview Apartments** is a proposed development of 81 affordable housing units and 4,500 square feet of commercial development. The project is located at 210-262 Chinaberry and 351 Autumn Drive.
19. **San Elijo Hills Town Center** is a mixed-use development that consists of 12,000 square feet of ground-floor commercial space and 12 condominiums. The project is located at San Elijo Road and Elfin Forest Road.
20. **Main Street Plaza** is a proposed mixed-use development that consists of 475 apartments, 62,080 square feet of commercial use, 14,800 square feet of office use, 40,000 square feet of residential storage, and a 4,559 gym/lounge. The project is located in the San Marcos Creek District Specific Plan area at 1167 West San Marcos Boulevard.
21. **Richmar Specific Plan** is the evaluation of a Specific Plan focusing on mixed-use development between Richmar Avenue and Mission Road and along Autumn Drive with extension of Tiger Way. The project is located south of Richmar Avenue to the area north of San Marcos Elementary School, south of Autumn Drive, and from Paseo de Oro to Firebird.
22. **The Promenade @ Creekside** is a proposed mixed-use development that consists of 98 apartments and 26,491 square feet of commercial use. The project is located in the San Marcos Creek District Specific Plan area at South Bent Avenue and Grand Avenue.
23. **The Quad at CSUSM** is a proposed 5-story mixed-use building consisting of 174,000 square feet of student housing and retail space.
24. **Sonic Drive-In** is a proposed 1,795 square foot drive-in restaurant with 899 square feet of covered outdoor dining area. The project is located at the southeast corner of Grand Avenue and Via Vera Cruz.
25. **Pacific Commercial** is a project proposing development of 31,776 square feet of commercial space on a 2.77 acre lot at the northeast corner of Grand Avenue and Pacific Street.
26. **Nicholas Banche** is a proposed development of 11 single-family homes in the area of Poinsettia Avenue and Specialty Drive.
27. **Candera** is a partially complete development constructing 50 multi-family units and 8 single-family homes. The project is located at Bougher Road and Via Camellia.
28. **Leigh Hanson site** is a proposed Specific Plan Amendment to allow the construction of 346 dwelling units consisting of single family and duplex units, and a K-8 school. The project is located on Twin Oaks Valley Road, south of Craven Road.

29. **San Marcos Highlands** is a proposed project consisting of 198 single family homes located at the northern terminus of Las Posas Road.
30. **UK Investments, LLC** is a proposed project consisting of 35 units of multi-family housing on N. Alda Drive.
31. **Shane Park Plaza** is a proposed mixed-use neighborhood shopping center consisting of 6,138 square feet of retail use and 19 multi-family dwelling units. The project is located on Rancho Santa Fe Road between Grand Avenue and La Mirada Drive.

CITY OF ESCONDIDO

1. **Escondido Asphalt Expansion** is located at 500 North Tulip Street and proposes to expand the operations of an existing asphalt concrete plant from 250,000 tons per year of material to 400,000 tons per year.
2. **Springhill Suites by Marriott** is located at 300 La Terraza Boulevard in the City of Escondido. The project consists of 105 hotel rooms.
3. **350 La Terraza Boulevard** is located on La Terraza Boulevard north of 9th Avenue and south of Valley Parkway in the City of Escondido. The project consists of a 44,000-square foot office building.
4. **City Square Residential** project is located at the southeast corner of the Centre City Parkway / 2nd Avenue intersection in the City of Escondido. This project consists of developing 102 multifamily dwelling units, 20 of which are already developed.
5. **Escondido Research and Technology Center (ERTC)** is a research center comprising of 208 acres located along the future alignment of Citracado Parkway in the City of Escondido.

8.2 Network Conditions

Several network improvements are proposed by the cumulative projects listed above. However, since the timeframe for construction of the majority of these improvements is unknown, the existing lane geometries with the inclusion of the Harmony Grove Village network improvements currently under construction were assumed as the baseline conditions in the Existing + Cumulative scenarios. This is a conservative approach in that cumulative project volumes are included without including the corresponding cumulative network mitigation.

In addition, the Citracado Parkway Extension project was not included in the near-term conditions per the direction of City of Escondido staff. The extension project is delayed due to funding issues. In October 2015, the City of Escondido's attempt to receive funding through the Transportation Investment Generating Economic Recovery (TIGER) grant program, distributed by the U.S.

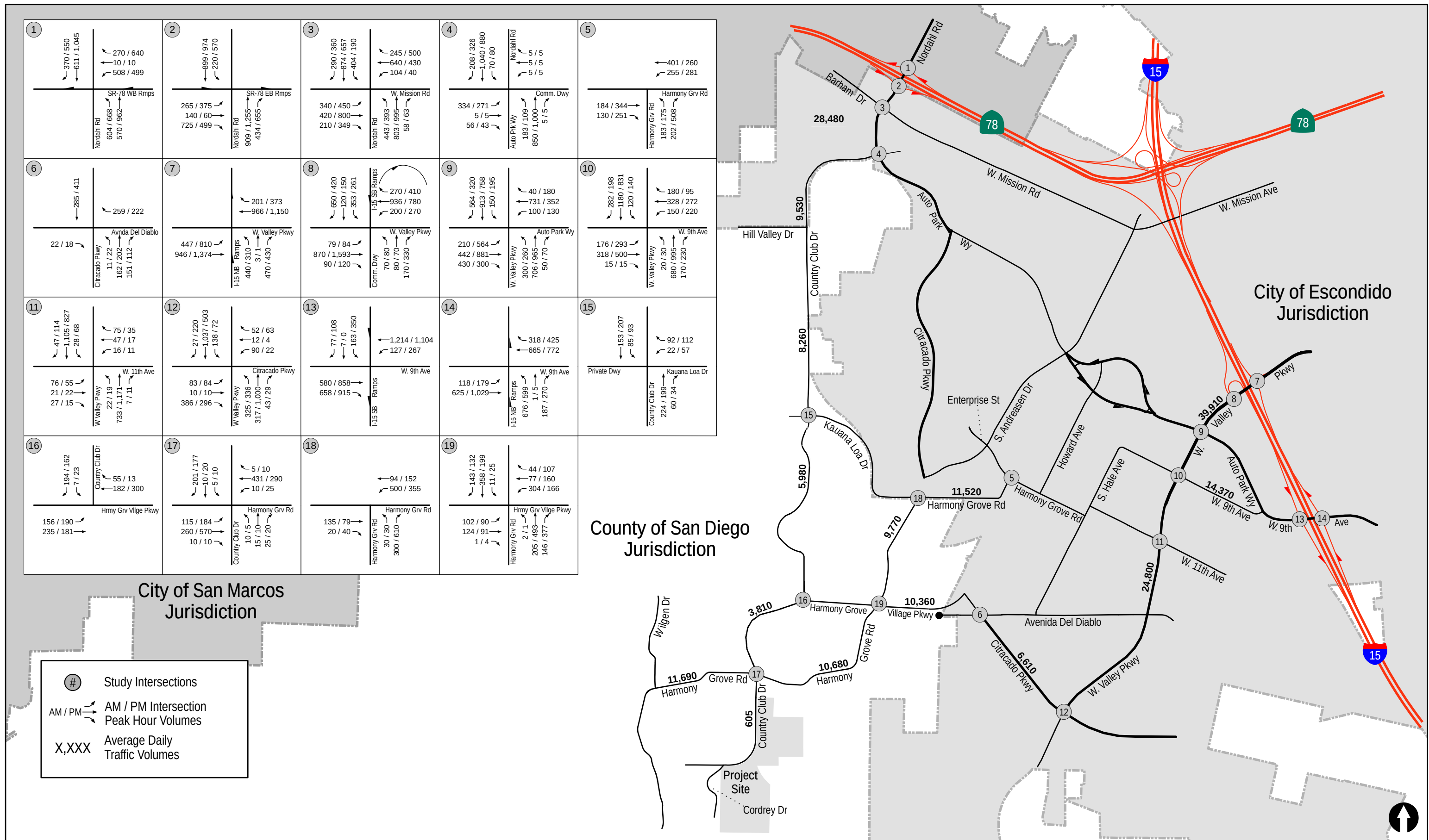
Department of Transportation, was denied. Therefore, due to a lack of funding and an unknown timeframe for completion, this connection was not included in the near-term analysis.

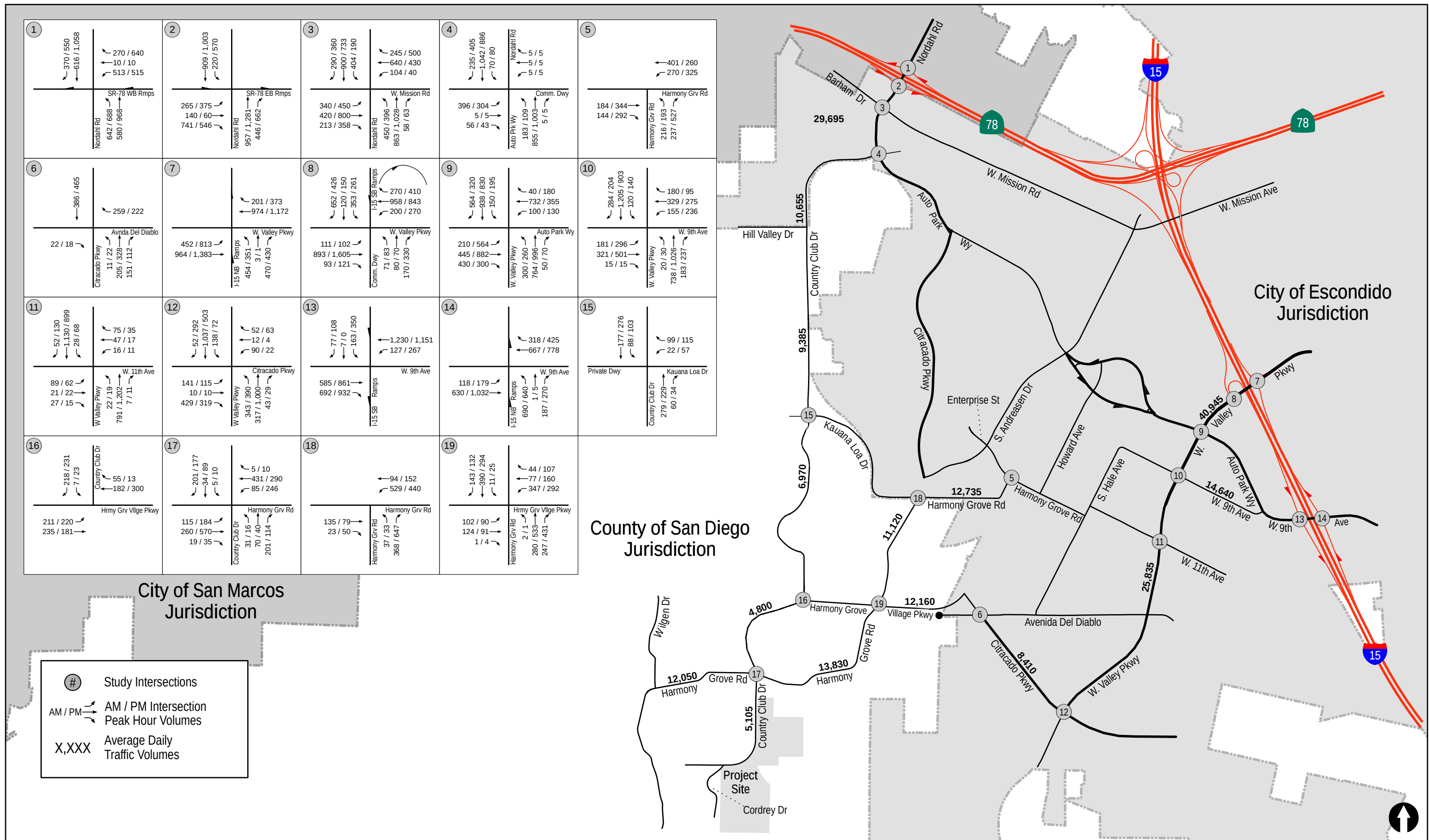
8.3 Traffic Volumes

In order to forecast traffic volumes for the cumulative condition, the SANDAG North County Model traffic model, the County of San Diego *General Plan* traffic model, and the recently adopted Escondido *General Plan* traffic model were reviewed. Land use assumptions contained in these forecast models within the Project area were reviewed and cumulative projects listed in the section above were determined to be included in the traffic volume forecast. All of these projects were assumed to be completed by the near-term condition, with the exception of the University District Specific Plan and the San Marcos Creek District Specific Plan.

In order to forecast intersection traffic volumes for the Existing + Cumulative Projects condition, the forecast ADT volumes taken from the SANDAG models were then used to calculate peak hour volumes based partially on the existing relationship between ADT and peak hour volumes. This same relationship can be assumed to generally continue in the future.

Figure 8–1 depicts the Existing + Cumulative Projects traffic volumes and **Figure 8–2** shows the Existing + Project + Cumulative Projects traffic volumes in the study area.





9.0 ANALYSIS OF NEAR-TERM SCENARIOS

9.1 Existing + Project Conditions

9.1.1 Peak Hour Intersection Levels of Service

Table 9–1 summarizes the Existing + Project intersections LOS. As seen in *Table 9–1*, with the addition of Project traffic, the following intersections are calculated to operate at unacceptable levels of service:

City of Escondido

- Intersection #10. Valley Parkway / 9th Avenue – LOS D in the PM peak hour

Based on the applied significance criteria, **no significant direct impacts** were calculated with the addition of Project traffic since the Project-induced increase in delay is less than 2.0 seconds for LOS D operating intersections within the City of Escondido.

County of San Diego

- **Intersection #17. Country Club Drive/ Harmony Grove Road – LOS F in the PM peak hour (Signalized)**

Based on the applied significance criteria, **one (1) significant direct impact** was calculated with the addition of Project traffic at the locations **bolded** and underlined above since the Project-induced increase in delay results in LOS F operations at this signalized intersection located within the County of San Diego.

Appendix G contains the Existing + Project intersection analysis worksheets.

9.1.2 Daily Street Segment Operations

Table 9–2 summarizes the Existing + Project roadway segment LOS. As seen in *Table 9–2*, with the addition of Project traffic, the following segments are calculated to operate at unacceptable levels of service:

City of Escondido

- **Segment #6. Country Club Drive: Auto Park Way to Hill Valley Road (LOS D)**

Based on the applied significance criteria, **one (1) significant direct impact** was calculated with the addition of Project traffic at the location **bolded** and underlined above since the Project-induced increase in V/C is greater than 0.02 for LOS D operating street segments within the City of Escondido.

9.1.3 Freeway Mainline Operations

Table 9–3 summarizes the Existing + Project freeway mainline operations on SR 78. As seen in *Table 9–3*, with the addition of Project traffic the following segments of SR 78 operate at unacceptable levels of service:

- Mainline #1. SR 78 Westbound, west of Nordahl Road: LOS E/E during the AM/PM peak hours

Based on the applied significance criteria, **no significant direct impacts** were calculated with the addition of Project traffic since the Project-induced increase in V/C is less than 0.02 for LOS D operating freeway mainline segments.

9.2 Existing + Cumulative Project Conditions

9.2.1 Peak Hour Intersection Levels of Service

Table 9–1 summarizes the Existing + Cumulative Projects intersections LOS. As seen in Table 9–1, with the addition of cumulative projects traffic, the following intersections are calculated to operate at unacceptable levels of service:

City of Escondido

- Intersection #3. Auto Park Way / Mission Rd –LOS D/D during the AM/PM peak hours
- Intersection #7. Valley Pkwy / I-15 NB Ramps – LOS D during the PM peak hour
- Intersection #8. Valley Pkwy / I-15 SB Ramps – LOS D/E during the AM/PM peak hours
- Intersection #9. Valley Pkwy / Auto Park Way – LOS D/D during the AM/PM peak hours
- Intersection #10. Valley Pkwy / 9th Ave – LOS D during the PM peak hour
- Intersection #12. Valley Pkwy / Citracado Pkwy – LOS D during the AM peak hour

Appendix H contains the Existing + Cumulative Projects intersection analysis worksheets.

9.2.2 Daily Street Segment Operations

Table 9–2 summarizes the Existing + Cumulative Projects roadway segment LOS. As seen in Table 9–2, with the addition of cumulative projects traffic, the following segments are calculated to operate at unacceptable levels of service:

City of Escondido

- Segment #5. 9th Avenue: Valley Parkway to Auto Park Way – LOS E
- Segment #6. Country Club Drive: Auto Park Way to Hill Valley Road – LOS E

County of San Diego

- Segment #13. Harmony Grove Road: Kauana Loa Drive to Enterprise Street – LOS F (*Unsignalized*)

9.2.3 Freeway Mainline Operations

Table 9–3 summarizes the Existing + Cumulative Projects freeway mainline operations on SR 78. As seen in Table 9–3, with the addition of cumulative projects traffic, the following segments of SR 78 operate at unacceptable levels of service:

- Mainline #1. SR 78 Westbound, west of Nordahl Road: LOS F(0)/F(0) during the AM/PM peak hours

9.3 Existing + Project + Cumulative Projects Conditions

9.3.1 Peak Hour Intersection Levels of Service

Table 9–1 summarizes the Existing + Project + Cumulative Projects intersections LOS. As seen in Table 9–1, with the addition of Project traffic and cumulative project traffic, the following intersections are calculated to operate at unacceptable levels of service:

City of Escondido

- Intersection #3. Auto Park Way / Mission Rd –LOS D/D during the AM/PM peak hours
- **Intersection #4. Auto Park Way / Country Club Dr – LOS D during the AM peak hour**
- Intersection #7. Valley Pkwy / I-15 NB Ramps – LOS D during the PM peak hour
- Intersection #8. Valley Pkwy / I-15 SB Ramps – LOS D/E during the AM/PM peak hours
- Intersection #9. Valley Pkwy / Auto Park Way – LOS D/D during the AM/PM peak hours
- Intersection #10. Valley Pkwy / 9th Ave – LOS D during the PM peak hour
- **Intersection #12. Valley Pkwy / Citracado Pkwy – LOS D during the AM peak hour**

Based on the applied significance criteria, **two (2) significant cumulative impacts** were calculated with the addition of Project traffic and cumulative projects traffic at the intersections **bolded** and **underlined** above since the Project-induced increase in delay is greater than 2.0 seconds for LOS D operating intersections within the City of Escondido.

County of San Diego

- **Intersection #17. Country Club Drive / Harmony Grove Rd – LOS F during the PM peak hour** (*Signalized*)
- **Intersection #18. Harmony Grove Rd / Kauana Loa Dr – LOS E/F during the AM/PM peak hours** (*Unsignalized*)

Based on the applied significance criteria, **two (2) significant cumulative impacts** were calculated with the addition of Project traffic and cumulative projects traffic at the intersections **bolded** and **underlined** above since the Project-induced increase in delay results in LOS F operations at the signalized intersection and the Project adds greater than 20 peak hour trips or 5 peak hour trips to unsignalized County intersections operating at LOS E or F, respectively.

Appendix I contains the Existing + Project + Cumulative Projects intersection analysis worksheets.

9.3.2 Daily Street Segment Operations

Table 9–2 summarizes the Existing + Project + Cumulative Projects roadway segment LOS. As seen in Table 9–2 with the addition of Project traffic and cumulative project traffic, the following segments are calculated to operate at unacceptable levels of service:

City of Escondido

- Segment #5. 9th Avenue: Valley Parkway to Auto Park Way – LOS E
- **Segment #6. Country Club Drive: Auto Park Way to Hill Valley Road – LOS F**

County of San Diego

- Segment #7. Country Club Drive: Hill Valley Drive to Kauana Loa Drive – LOS E
- **Segment #11. Harmony Grove Road: Country Club Drive to Harmony Grove Village Parkway – LOS E**
- **Segment #12. Harmony Grove Road: Harmony Grove Village Parkway to Kauana Loa Drive – LOS E**
- **Segment #13. Harmony Grove Road: Kauana Loa Drive to Enterprise Street – LOS F**
- **Segment #14. Harmony Grove Village Parkway: Harmony Grove Village Road to Citracado Parkway – LOS E**

Based on the applied significance criteria, **five (5) significant cumulative impacts** were calculated with the addition of Project traffic and cumulative projects traffic on the street segments **bolded** and **underlined** above since the Project-induced increase in V/C is greater than 0.02 for LOS E or F operating street segments in the City of Escondido and since the Project adds greater than 200 or 100 ADT to County street segments operating at LOS E or F, respectively. .

9.3.3 Freeway Mainline Operations

Table 9–3 summarizes the Existing + Project + Cumulative Projects freeway mainline operations on SR 78. As seen in Table 9–3, with the addition of Project traffic and cumulative projects traffic, the following segments of SR 78 operate at unacceptable levels of service:

- Mainline #1. SR 78 Westbound, west of Nordahl Road: LOS F(0)/F(0) during the AM/PM peak hours

Based on the applied significance criteria, **no significant cumulative impacts** were calculated with the addition of Project traffic and cumulative projects traffic since the Project-induced increase in V/C is less than 0.01 for LOS F(0) operating freeway mainline segments.

TABLE 9-1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c	
1. Nordahl Rd / SR 78 WB Ramps	City	Signal	AM	22.4	C	22.5	C	0.1	27.1	C	30.1	C	3.0	None
			PM	25.2	C	25.7	C	0.5	31.6	C	32.1	C	0.5	
2. Nordahl Rd / SR 78 EB Ramps	City	Signal	AM	21.6	C	21.6	C	0.0	22.1	C	22.9	C	0.8	None
			PM	20.4	C	21.1	C	0.7	29.4	C	31.9	C	2.5	
3. Auto Park Way / Mission Rd	City	Signal	AM	32.1	C	32.1	C	0.0	51.9	D	52.6	D	0.7	None
			PM	33.7	C	34.1	C	0.4	49.5	D	50.0	D	0.5	
4. Auto Park Way / Country Club Dr	City	Signal	AM	16.8	B	19.5	B	2.7	30.7	C	37.3	D	6.6	Cumulative
			PM	17.5	B	18.9	B	1.4	22.4	C	25.3	C	2.9	
5. Harmony Grove Rd / Enterprise St	City	Signal	AM	13.1	B	13.1	B	0.0	15.0	B	15.4	B	0.4	None
			PM	14.8	B	15.7	B	0.9	17.3	B	18.7	B	1.4	
6. Avenida Del Diablo / Citracado Pkwy	City	Signal	AM	10.0	B	10.2	B	0.2	10.4	B	10.6	B	0.2	None
			PM	9.5	A	10.1	B	0.6	10.3	B	11.1	B	0.8	
7. Valley Pkwy / I-15 NB Ramps	City	Signal	AM	26.5	C	26.7	C	0.2	31.0	C	31.2	C	0.2	None
			PM	35.1	D	36.0	D	0.9	39.3	D	40.6	D	1.3	
8. Valley Pkwy / I-15 SB Ramps	City	Signal	AM	31.1	C	31.8	C	0.7	39.9	D	39.9	D	0.0	None
			PM	32.7	C	33.2	C	0.5	63.0	E	64.6	E	1.6	
9. Valley Pkwy / Auto Park Way	City	Signal	AM	30.6	C	30.7	C	0.1	38.4	D	38.5	D	0.1	None
			PM	32.2	C	32.4	C	0.2	46.3	D	46.3	D	0.0	
10. Valley Pkwy / 9 th Ave	City	Signal	AM	26.6	C	27.1	C	0.5	31.3	C	31.7	C	0.4	None
			PM	36.2	C	36.9	D	0.7	49.4	D	50.7	D	1.3	
11. Valley Pkwy / 11 th Ave	City	Signal	AM	16.1	B	16.4	B	0.3	16.2	B	16.8	B	0.6	None
			PM	14.2	B	15.2	B	1.0	16.9	B	17.1	B	0.2	
12. Valley Pkwy / Citracado Pkwy	City	Signal	AM	30.1	C	33.8	C	3.7	36.7	D	44.0	D	7.3	Cumulative
			PM	24.7	C	27.2	C	2.5	26.6	C	29.1	C	2.5	
13. Auto Park Way / I-15 SB Ramps	City	Signal	AM	17.7	B	18.6	B	0.9	19.1	B	20.5	C	1.4	None
			PM	24.1	C	24.4	C	0.3	27.1	C	27.9	C	0.8	
14. Auto Park Way / I-15 NB Ramps	City	Signal	AM	21.9	C	22.1	C	0.2	22.5	C	22.7	C	0.2	None
			PM	21.0	C	21.6	C	0.6	21.7	C	22.3	C	0.6	
(Continued on Next Page)														

TABLE 9-1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Projects		Existing + Project + Cumulative Projects			Impact Type
				Delay ^a	LOS ^b	Delay	LOS	Δ ^c	Delay	LOS	Delay	LOS	Δ ^c	
(Continued from Previous Page)														
15. Country Club Dr / Kauana Loa Dr	County	AWSC ^e	AM	8.2	A	8.7	A	–	9.8	A	10.7	B	–	None
			PM	8.8	A	9.7	A	–	10.6	B	12.2	B	–	
16. Country Club Dr / Harmony Grove Village Pkwy	County	AWSC	AM	8.9	A	9.4	A	–	10.0	B	10.8	B	–	None
			PM	10.3	B	11.4	B	–	11.1	B	12.4	B	–	
17. Country Club Dr / Harmony Grove Rd	County	Signal	AM	30.5	C	39.7	D	–	40.4	D	43.1	D	–	Direct & Cumulative
			PM	36.6	D	>100.0	F	>2.0	49.9	D	>100.0	F	>2.0	
18. Harmony Grove Rd / Kauana Loa Dr	County	MSSC ^f	AM	12.0	B	14.2	B	–	25.6	D	48.6	E	75 ^g	Cumulative
			PM	15.2	C	18.4	C	–	32.2	D	63.5	F	40 ^g	
19. Harmony Grove Rd / Harmony Grove Village Pkwy	County	Signal	AM	24.2	C	25.1	C	–	25.5	C	26.6	C	–	None
			PM	20.9	C	24.1	C	–	24.9	C	26.9	C	–	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. “Δ” denotes the Project-induced increase in delay for intersections located in the City of Escondido. “Δ” denotes the Project-induced increase in delay for signalized intersections and Project traffic added to the critical movement for unsignalized intersections located in the County of San Diego.
- d. Project increases in delay or number of trips only shown for County intersection where LOS E or F operations are reported.
- e. AWSC – All Way Stop Controlled intersection. Average intersection delay is reported.
- f. MSSC – Minor Street Stop Controlled intersection. Minor street left-turn delay is reported.
- g. Both the northbound left-turn and right-turn volumes are shown for the LOS E/F intersection since the existing geometry provides one shared lane for both movements.

General Notes:

- 1. DNE = Does not exist.
- 2. **Bold** typeface and shading represents a significant impact.
- 3. Jur. = Jurisdiction, City = City of Escondido

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 9–2
NEAR-TERM STREET SEGMENT OPERATIONS

City of Escondido Street Segments	Existing Capacity (LOS E) ^a	Existing			Existing + Project				Existing + Cumulative Projects			Existing + Project + Cumulative Projects				Impact Type
		ADT ^a	LOS ^b	V/C	ADT	LOS	V/C	Δ ^d	ADT	LOS	V/C	ADT	LOS	V/C	Δ ^d	
Auto Park Way 1. Mission Rd to Country Club Dr ^f	43,500	26,110	B	0.600	27,325	B	0.628	0.028	28,480	B	0.655	29,695	C	0.683	0.028	None
Citracado Parkway 2. Avenida Del Diablo to Valley Pkwy	15,000	6,170	B	0.411	7,970	B	0.531	0.120	6,610	B	0.441	8,410	C	0.561	0.120	None
Valley Parkway 3. 11 th Ave to Citracado Pkwy	37,000	24,110	C	0.652	25,145	C	0.680	0.028	24,800	C	0.670	25,835	C	0.698	0.028	None
4. Auto Park Wy to I-15 SB Ramps	70,000	37,280	B	0.533	38,315	C	0.547	0.014	39,910	C	0.570	40,945	C	0.585	0.015	None
9th Avenue 5. Valley Pkwy to Auto Park Way	15,000	11,630	D	0.775	11,900	D	0.793	0.018	14,370	E	0.958	14,640	E	0.976	0.018	None
Country Club Drive 6. Auto Park Way to Hill Valley Dr	10,000	6,490	C	0.649	7,615	D	0.762	0.113	9,530	E	0.953	10,655	F	1.066	0.113	Direct & Cumulative
County of San Diego Street Segments	Existing Capacity (LOS E) ^a	Existing			Existing + Project			Existing + Cumulative Projects			Existing + Project + Cumulative Projects			Impact Type		
		ADT	LOS		ADT	LOS	Δ ^d	ADT	LOS		ADT	LOS	Δ ^d			
Country Club Drive 7. Hill Valley Dr to Kauana Loa Dr	9,700	5,980	B		7,105	C	—	8,260	D		9,385	E	1,125		Cumulative	
8. Kauana Loa Dr to Harmony Gr. Vill. Pkwy	9,700	3,260	A		4,250	A	—	5,980	B		6,970	C	—		None	
9. Harmony Gr. Vill. Pkwy to Harmony Grove Rd	19,000	2,430	A		3,420	B	—	3,810	B		4,800	B	—		None	
Harmony Grove Road 10. Wilgen Dr to Country Club Dr	19,000	8,370	C		8,730	C	—	11,690	D		12,050	D	—		None	
11. Country Club Dr to Harmony Gr. Vill. Pkwy	16,200	7,510	D		10,660	D	—	10,680	D		13,830	E	3,150		Cumulative	
12. Harmony Gr. Vill. Pkwy to Kauana Loa Dr	16,200	5,890	C		7,240	D	—	9,770	D		11,120	E	1,350		Cumulative	
13. Kauana Loa Dr to Enterprise St	9,700	7,310	C		8,525	D	—	11,520	F		12,735	F	1,215		Cumulative	
Harmony Grove Village Parkway 14. Harmony Grove Rd to Citracado Pkwy	16,200	8,220	D		10,020	D	—	10,360	D		12,160	E	1,800		Cumulative	

Footnotes:
a. Capacities based on City of Escondido and County of San Diego Roadway Classification Tables. See *Table 6–2* for detailed notes on roadway capacities for Country Club Drive, Harmony Grove Road, and Harmony Grove Village Parkway.
b. ADT – Average Daily Traffic Volumes.
c. LOS – Level of Service.
d. V/C – Volume to Capacity ratio.
e. “Δ” denotes the Project-induced increase in V/C for City of Escondido roadway segments. “Δ” denotes the Project-induced increase in ADT for segments operating at LOS E or F located in the County of San Diego.
f. Auto Park Way is currently built as a 6-Ln Major from Mission Road to Meyers Avenue and a 4-Ln Major from Meyers Avenue to Country Club Drive. Therefore, a 5-Ln Major road capacity of 43,500 was used in the analysis.

General Notes:
1. **Bold** typeface and **shading** represents a significant impact.

TABLE 9–3
NEAR-TERM FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes ^a	Hourly Capacity ^b	Existing ^c		V/C ^d		LOS ^e		Existing + Project		V/C		LOS		Δ ^f V/C		Impact Type
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
State Route 78																		
West of Nordahl Rd	EB	3M+1A	7,200	4,994	4,983	0.694	0.692	C	C	5,010	5,030	0.696	0.699	C	C	0.002	0.007	None
	WB	3M	6,000	5,862	5,625	0.977	0.938	E	E	5,900	5,645	0.983	0.941	E	E	0.006	0.003	None
East of Nordahl Rd	EB	3M+1A	7,200	4,144	5,097	0.576	0.708	B	C	4,156	5,104	0.577	0.709	B	C	0.002	0.001	None
	WB	4M+1A	9,200	5,663	5,070	0.616	0.551	B	B	5,668	5,086	0.616	0.553	B	B	0.001	0.002	None
Freeway Segment	Dir.	# of Lanes ^a	Hourly Capacity ^b	Existing + Cumulative Projects		V/C ^d		LOS ^e		Existing + Project + Cumulative Projects		V/C		LOS		Δ ^f V/C		Impact Type
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
State Route 78																		
West of Nordahl Rd	EB	3M+1A	7,200	5,547	5,535	0.770	0.769	C	C	5,563	5,582	0.773	0.775	C	C	0.002	0.007	None
	WB	3M	6,000	6,511	6,248	1.085	1.041	F(0)	F(0)	6,549	6,268	1.091	1.045	F(0)	F(0)	0.006	0.004	None
East of Nordahl Rd	EB	3M+1A	7,200	4,424	5,442	0.615	0.756	B	C	4,436	5,449	0.616	0.757	B	C	0.002	0.001	None
	WB	4M+1A	9,200	6,046	5,413	0.657	0.588	C	B	6,051	5,429	0.658	0.590	C	B	0.001	0.002	None

Footnotes:

- a.

Lane geometry taken from PeMS lane configurations at corresponding post mile including SR 78 recent improvements.
- b.

Existing volumes taken from PeMS peak hour data.
- c.

Capacity calculated at 2000 vehicles per hour (vph) per mainline lane (pcphpl) and 1200 vph per lane for auxiliary lanes from *Caltrans Guide for the Preparation of Traffic Impact Studies, Dec 2002*.
- d.

V/C = (Peak Hour Volume/Hourly Capacity)
- e.

LOS = Level of Service
- f.

“Δ” denotes the Project-induced increase in V/C. Per SANTEC/ITE Guidelines, a significant impact occurs when the V/C is increased by 0.01 for LOS E or F.

General Notes:

1.

M = Mainline
2.

A = Auxiliary

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

10.0 BUILDOUT ASSESSMENT

A buildout analysis was completed since the proposed Project land uses would generate more traffic than were project for the parcel in the *General Plan*. Per County criteria, a buildout analysis is conducted to determine whether the proposed land use changes would require any changes to the *Mobility Element* roadway classifications. The buildout analysis presented in this section compares the adopted *General Plan* to the proposed Project.

10.1 Network Conditions

This section describes the buildout of the street system based on the *General Plan* roadway classifications for City of Escondido and County of San Diego study area roadways, respectively. Per County guidelines, the *General Plan Mobility Element* roadway classifications were used in the LOS analysis provided in this report.

Table 10–1 displays the City of Escondido *General Plan Mobility Element* and County of San Diego *General Plan Mobility Element* roadway classifications for study area street segments.

TABLE 10–1
GENERAL PLAN STREET SEGMENT CLASSIFICATIONS

Street Segments	Currently Built As		Adopted <i>General Plan</i> Classification ^a	
	Roadway Type	Capacity	Roadway Type	Capacity
City of Escondido				
Auto Park Way				
1. Mission Rd to Country Club Dr	5-Ln Divided	43,500	6-Ln Super Major Road	50,000
Citracado Parkway				
2. Avenida Del Diablo to Valley Pkwy	2-Ln Divided	15,000	4-Ln Major Road	37,000
Valley Parkway				
3. 11 th Ave to Citracado Pkwy	4-Ln Divided	37,000	4-Ln Major Road	37,000
4. Auto Park Wy to I-15 SB Ramps	8-Ln Divided	70,000	6-Ln Prime Arterial ^b	60,000
9th Avenue				
5. Valley Pkwy to Auto Park Way	2-Ln Undivided	15,000	4-Lane Collector	34,200
Country Club Drive				
6. Auto Park Way to Hill Valley Rd	2-Ln Undivided	10,000	2-Lane Local Collector	10,000
(Continued on Next Page)				

TABLE 10-1
GENERAL PLAN STREET SEGMENT CLASSIFICATIONS

Street Segments	Currently Built As		Adopted <i>General Plan</i> Classification ^a	
	Roadway Type	Capacity	Roadway Type	Capacity
<i>(Continued from Previous Page)</i>				
County of San Diego				
Country Club Drive				
7. Hill Valley Rd to Kauana Loa Dr	2-Ln Undivided	9,700	Unclassified ^c	9,700
8. Kauana Loa Dr to Harmony Grove Village Pkwy	2-Ln Undivided	9,700	Unclassified ^d	9,700
9. Harmony Grove Village Pkwy to Harmony Grove Rd	2-Ln Undivided	19,000	Unclassified ^d	19,000
Harmony Grove Road				
10. Wilgen Dr to Country Club Dr	2-Ln Undivided	19,000	2.2C Light Collector ^e	19,000
11. Country Club Dr to Harmony Grove Village Pkwy	2-Ln Undivided	16,200	2.2B Light Collector	19,000
12. Harmony Grove Village Pkwy to Kauana Loa Dr	2-Ln Undivided	16,200	2.2B Light Collector	19,000
13. Kauana Loa Dr to Enterprise St	2-Ln Undivided	9,700	Unclassified ^f	9,700
Harmony Grove Village Parkway				
14. Harmony Grove Rd to Citracado Parkway	2-Ln Undivided	16,200	2.1C Community Collector	19,000

Footnotes:

- a. Classifications based on City of Escondido and County of San Diego *General Plan Mobility Elements*.
- b. From Auto Park Way to the I-15 Southbound Ramps, W. Valley Parkway is currently built as an eight-lane divided roadway with an existing LOS E capacity of 70,000 ADT, exceeding is *Mobility Element* classification. The existing eight-lane capacity was used in the buildout assessment.
- c. Although Country Club Drive is not a Mobility Element roadway, due to the increased paved width and 45 mph speed limit and reduced shoulder, the roadway functions as a 2.2F Light Collector with an LOS “E” capacity of 9,700 ADT.
- d. Country Club Drive from Kauana Loa Drive to the northerly boundary of Harmony Grove Village is currently being improved to modified Rural Light Collector standards per the previously adopted General Plan (corresponding with a 2.2F Light Collector on the currently adopted General Plan) with an ADT capacity of 9,700. South of the Harmony Grove Village Project boundary to Harmony Grove Village Parkway, Country Club Drive is being improved to Rural Collector standards per the previously adopted General Plan (corresponding with 2.2E Light Collector on the currently adopted General Plan) with an ADT capacity of 16,200. For purposes of being conservative, the 9,700 ADT capacity was used in the buildout assessment.
- e. Harmony Grove Road from Wilgen Drive to Country Club Drive is classified on the County of San Diego Mobility Element as a 2.2E Light Collector with an LOS E capacity of 16,200 ADT. However, the Harmony Grove Village project is currently improving the roadway to 2.2C Light Collector standards with an ADT capacity of 19,000. The 19,000 ADT capacity was used in the buildout assessment.
- f. Harmony Grove Road from Kauana Loa Drive to Enterprise Street is currently built as a two-lane roadway with curb, gutter and sidewalk improvements for the majority of the roadway with a posted speed limit of 40 mph. The roadway is located in both the County and City’s jurisdiction; however, the majority of the roadway abuts the County line. Therefore, an LOS E capacity of 9,700 ADT was used in the buildout assessment.

10.1.1 Citracado Parkway Extension

The Citracado Parkway Specific Alignment Plan and Final EIR was approved by the Escondido City Council in April 2012. The project will construct the connection of Citracado Parkway to Harmony Grove Road/ Kauana Loa Drive and create a “T” intersection with Harmony Grove Road, eliminating the east leg of the intersection. Traffic will be diverted from eastbound Harmony Grove Road to northbound Citracado Road to Andreasen Drive. Per City of Escondido staff, engineering drawings have been drafted and the project will be constructed once funding is identified. Therefore, this improvement was assumed to be completed in the buildout condition. This assumption is consistent with the future network used in the Certified Final EIR for the Harmony Grove Village project.



10.2 Traffic Volumes

In order to forecast traffic volumes for the buildout condition (with adopted *General Plan* land uses), the SANDAG Series 12 Year 2050 County Calibrated and the adopted Escondido *General Plan* SANDAG Series 11 North County Year 2030 traffic models were reviewed. These traffic models include *General Plan* roadway conditions and land uses from each jurisdiction. In addition, all cumulative projects listed in *Section 8.1* of this report were assumed to be at full buildout by this timeframe. Similar to the Existing + Cumulative Projects condition, it would be expected that vehicular traffic may decrease at certain study area locations due to the changes in the circulation network expected with the buildout of *General Plan* roadways and freeway improvements in the vicinity of the Project.

This is particularly evident on Country Club Drive where traffic volumes are shown to be reduced substantially compared to existing conditions. Based on professional engineering judgment and coordination with County of San Diego staff, the traffic volumes generated by the *General Plan* model do not appear to be accurate within this area. A review of the SANDAG Series 12 Year 2035 traffic model, which includes all *General Plan* land uses, including the Harmony Grove Village project, was conducted to determine if this model more accurately forecasts the future volumes on Country Club Drive. Based on a review of said model with confirmation from County staff, the SANDAG Series 12 Year 2035 traffic volumes were deemed more appropriate for use in the analysis of Country Club Drive. For example, Country Club Drive from Hill Valley Road to Kauana

Loa Drive shows 2,200 ADT in the Series 12 Year 2050 County Calibrated model when the volume today is 5,980 ADT. The Series 12 Year 2035 volume more accurately shows an increase in ADT over existing conditions with a forecasted volume of 7,500 ADT.

10.2.1 Citracado Parkway Extension

As mentioned, the Citracado Parkway Extension project will connect the current terminus of Citracado Parkway at Andreasen Drive to Avenida Del Diablo/Harmony Grove Village Parkway. With this connection, a cul-de-sac is proposed on Harmony Grove Road, just east of its intersection with the new connection. The County Calibrated and Escondido *General Plan* traffic models assume this connection. With the closure of this connection and extension of Citracado Parkway as reflected in the model, traffic volumes are shown to reroute to Citracado Parkway from Harmony Grove Road and Valley Parkway resulting in a decrease in buildout traffic volumes within the study area.

10.3 Trip Generation Comparison

As mentioned in *Section 2.0* of this report, the Project proposes a GPA for the Project site. The current *General Plan* designation is SR-0.5, and the Regional Category is Semi-Rural. Under the current *General Plan*, a maximum of 222 DU would be permitted (at a minimum of 0.5 acre lot sizes). Applying the SANDAG rate for the single-family residential land use, approximately 2,220 ADT would be generated by the existing zoning.

The Project is requesting a *General Plan* Amendment (GPA) to allow for a maximum development of 450 DU. Applying the single-family residential land use rate to 450 DU, approximately 4,500 ADT would be generated by the Project site, a net increase of 2,280 ADT.

An analysis of the site redevelopment was conducted to evaluate the buildout operations at fourteen (14) off-site street segment locations surrounding the Project area. A review of the SANDAG traffic models confirms the traffic volumes generated by the Project site reflect the adopted *General Plan* zoning. In order to evaluate the Project-related changes to the street system with the GPA, the net increase of 2,280 ADT was distributed to the street to represent the “With Project” conditions. Therefore, Buildout Without Project traffic volumes represent traffic generated by the adopted *General Plan* land uses for the Project site and the Buildout With Project traffic volumes represent the net increase in traffic with the GPA.

Table 10–2 shows the trip generation comparison for the each scenario.

Figure 10–1 depicts the Buildout Without Project traffic volumes and **Figure 10–2** depicts the Buildout With Project traffic volumes provided at the end of this section.

TABLE 10-2
BUILDOUT TRIP GENERATION COMPARISON

Land Use	Quantity	ADT ^a	
		Rate ^b	Volume
Without Project: Adopted <i>General Plan</i> Land Use			
Single Family Residential (SR-0.5 and A70 – 1 DU/0.5 acre)	222 DU	10 /DU	2,220
With Project: Proposed <i>General Plan</i> Amendment Land Use			
Single Family Residential (Approximately 4 DU/acre))	450 DU	10 /DU	4,500
Net Increase with Proposed <i>General Plan</i> Amendment Land Use	228 DU		2,280

Footnotes:

- a. ADT = Average Daily Traffic, rounded up to the nearest tenth.
- b. (Not so) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* dated April 2002.

10.4 Buildout Without Project Land Use Analysis

10.4.1 Daily Street Segment Operations

Table 10-3 summarizes the Buildout Without Project (with adopted *General Plan* land use) roadway segment LOS. As seen in *Table 10-3*, all street segments are calculated to operate at acceptable levels of service except for the segment of Country Club Drive between Auto Park Way and Hill Valley Drive, within the City of Escondido, which is forecasted to operate at LOS D.

10.5 Buildout With Proposed Project Land Use Analysis

10.5.1 Daily Street Segment Operations

Table 10-3 also summarizes the Buildout With Project (with proposed Project land use) roadway segment LOS. As seen in *Table 10-3*, all street segments are calculated to continue to operate at acceptable levels of service except for the segment along Country Club Drive between Auto Park Way and Hill Valley Drive which is forecasted to continue to operate at LOS D.

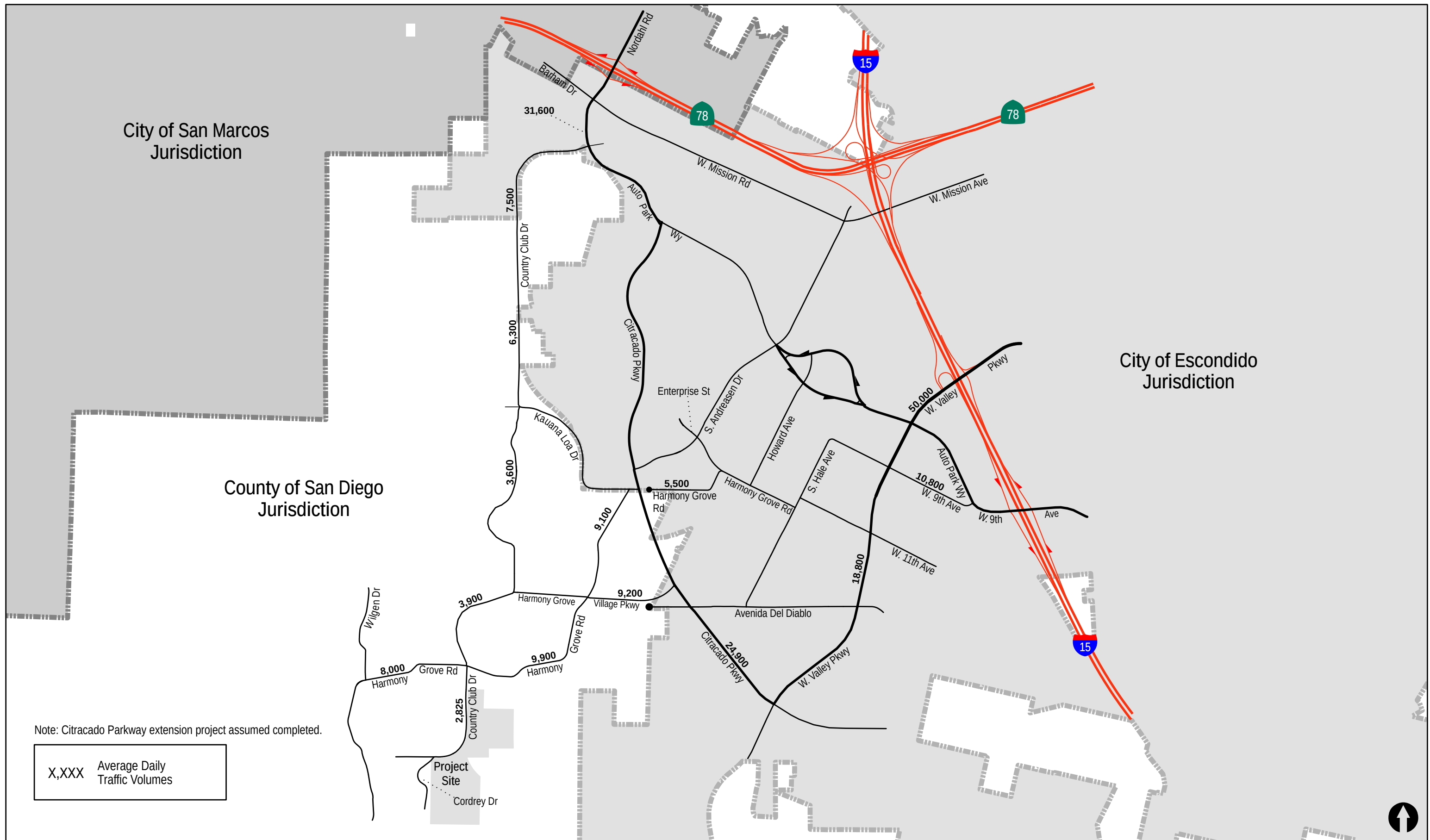
Based on the analysis of Country Club Drive from Auto Park Way to Hill Valley Drive, this portion of the roadway is anticipated to operate at an unacceptable level of service both with and without the proposed Project land use. It can therefore be concluded that the Project alone would not result in poor operations along this roadway under buildout conditions.

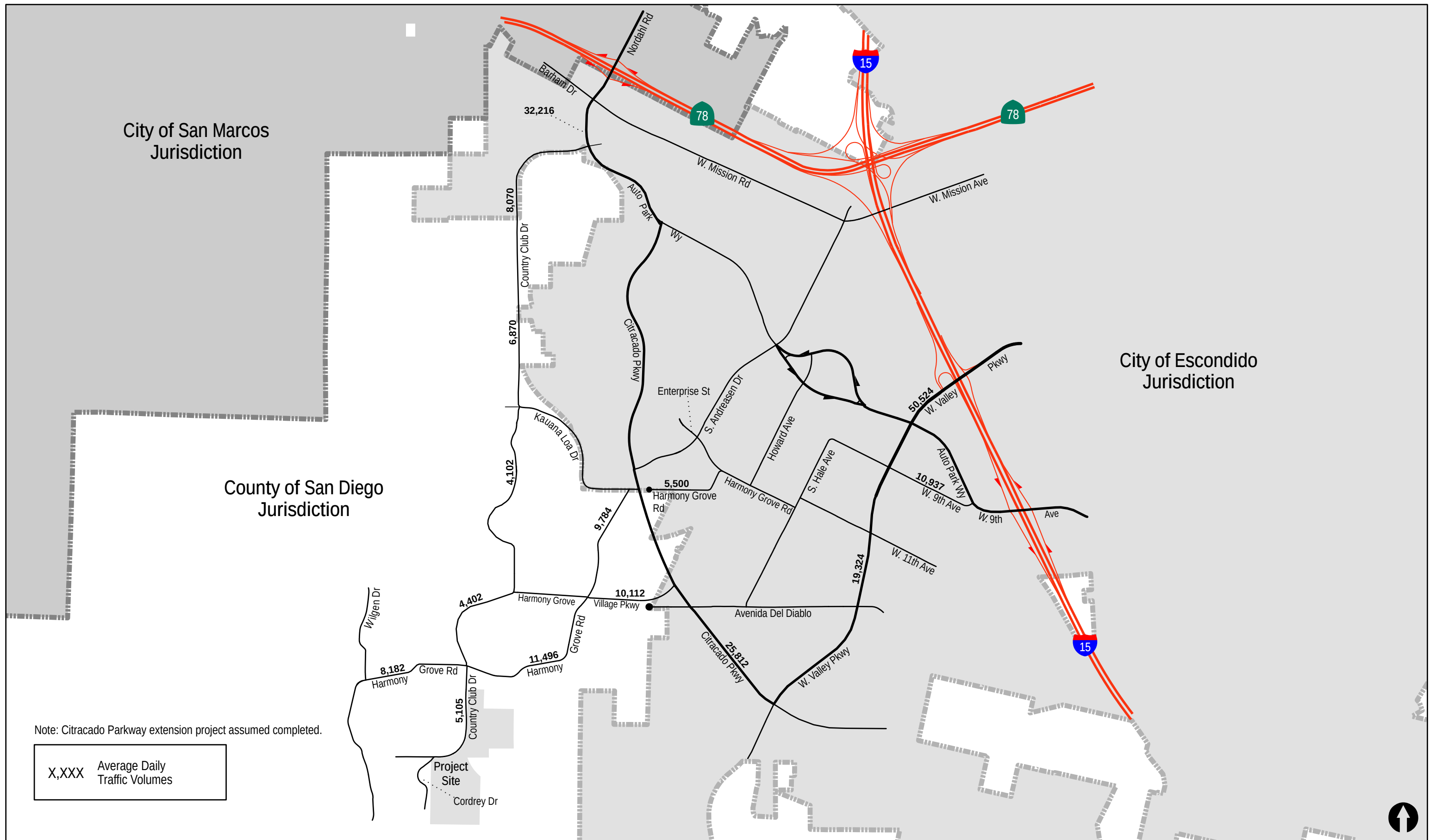
**TABLE 10-3
BUILDOUT STREET SEGMENT OPERATIONS**

City of Escondido Street Segments	General Plan Capacity (LOS E) ^a	Buildout Without Project (General Plan Land Use)			Buildout With Project (Proposed Project Land Use)		
		ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C
Auto Park Way							
1. Mission Rd to Country Club Dr	50,000	31,600	C	0.632	32,216	C	0.644
Citracado Parkway							
2. Avenida Del Diablo to Valley Pkwy	37,000	24,900	C	0.673	25,812	C	0.698
Valley Parkway							
3. 11 th Ave to Citracado Pkwy	37,000	18,800	B	0.508	19,324	B	0.522
4. Auto Park Way to I-15 SB Ramps	70,000 ^e	50,000	C	0.714	50,524	C	0.722
9th Avenue							
5. Valley Pkwy to Auto Park Way	34,200	10,800	A	0.316	10,937	A	0.320
Country Club Drive							
6. Auto Park Way to Hill Valley Dr	10,000	7,500	D	0.750	8,070	D	0.807
County of San Diego Street Segments	General Plan Capacity (LOS E) ^a	Buildout Without Project (General Plan Land Use)		Buildout With Project (Proposed Project Land Use)			
		ADT	LOS	ADT	LOS		
Country Club Drive							
7. Hill Valley Dr to Kauana Loa Dr	9,700	6,300	B	6,870	C		
8. Kauana Loa Dr to Harmony Grove Village Pkwy	9,700	3,600	A	4,102	A		
9. Harmony Gr. Vill. Pkwy to Harmony Grove Rd	19,000	3,900	B	4,402	B		
Harmony Grove Rd							
10. Wilgen Drive to Country Club Drive	16,200	8,000	C	8,182	C		
11. Country Club Drive to Harmony Gr. Vill. Pkwy	19,000	9,900	D	11,496	D		
12. Harmony Grove Village Pkwy to Kauana Loa Dr	19,000	9,100	C	9,784	D		
13. Kauana Loa Dr to Enterprise St	9,700	5,500	A	5,500	A		
Harmony Grove Village Parkway							
14. Harmony Grove Rd to Citracado Pkwy	19,000	9,200	C	10,112	D		

Footnotes:

- Capacities based on City of Escondido and County of San Diego Roadway Classification Tables. See *Table 10-1* for explanation on *General Plan* roadway classifications.
- ADT – Average Daily Traffic Volumes, rounded to the nearest hundredth.
- LOS – Level of Service.
- V/C – Volume to Capacity ratio.
- From Auto Park Way to the I-15 Southbound Ramps, W. Valley Parkway is currently built as an eight-lane divided roadway with an existing LOS E capacity of 70,000 ADT, exceeding is *Mobility Element* classification. The existing eight-lane capacity was used in the buildout assessment.





11.0 ACCESS AND OTHER ISSUES

This section has been provided to discuss the improvements to Country Club Drive along the Project frontage.

11.1 Access Road Discussion

11.1.1 Country Club Drive Street Segment

Project access is proposed via Country Club Drive south of Harmony Grove Road. This roadway is an unclassified substandard Rural Residential Road. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic.

Country Club Drive from Harmony Grove Road to Cordrey Drive is currently constructed with a paved width of 20 feet providing two 10-foot lanes in each direction. The roadway is undivided and does not provide a paved shoulder. Country Club Drive terminates just west of Cordrey Drive at Hillside Road. It currently serves as an access road to Harmony Grove Road for rural residential properties within the immediate vicinity.

The Project will increase the existing 605 ADT to 5,105 ADT. As part of the Project, the roadway is proposed to be improved to a “Public Enhanced Residential Collector”. This will include a three-foot parkway on the west side of the road, a ten-foot parkway on the east side, two eight-foot shoulders, two twelve-foot travel lanes and a 14-center turn lane/striped median. A five-foot landscaped area and a five-foot pathway are proposed on the east side of the road within the ten-foot parkway. Three approach lanes at the Country Club Drive/ Harmony Grove Road intersection are also proposed: a left-turn lane, thru lane, and dedicated right-turn lane. The left-turn and right-turn lanes will provide 100 feet of storage. The paved width will be 54 feet in a dedicated right-of-way of 67 feet. This configuration is similar to a “Community Collector With Continuous Left Turn Lane (2.1B), which is identified as having an “LOS E” threshold at 19,000 ADT. The circulation improvements encourage pedestrian and bicycle activity, which can reduce the number of vehicles on the roadway. In addition, a ten-foot multi-use trail on the west side will ultimately be constructed by the adjacent property owner.

Since the Project adds 4,500 ADT in addition to existing volumes, this street segment would be calculated to operate at LOS B. Southbound left-turning movements from Country Club Drive to the Project driveways will utilize the proposed two-way center turn lane. This center turn lane would allow for left-turning vehicles to queue outside the flow of thru traffic, thus allowing left-turning vehicles to be passed by thru vehicles without significantly slowing thru traffic and effectively increasing the capacity of Country Club Drive.

Figures 11–1 and 11–2 depict the conceptual roadway improvements to Country Club Drive, both on the north end and south end of the roadway.

It should be noted that a design speed exception is requested for a portion of Country Club Drive adjacent to Cordrey Lane. The request is for a reduced design speed on Country Club Drive from 30 MPH to 27.5 MPH at the existing crest vertical curve near the intersection of Cordrey Lane. A

copy of the design exception request is included in **Appendix J**. This request will not affect the roadway's ability to serve the approximately 600 ADT that will utilize that section of Country Club Drive.

11.1.2 *Country Club Drive/ Harmony Grove Road Intersection*

As part of the Harmony Grove Village project, the intersection of Country Club Drive at Harmony Grove Road is being improved to provide a traffic signal with north/south “split” phasing and east/west “protected” left-turn phasing. Crosswalks and pedestrian and equestrian-level push buttons are proposed for this intersection. Dedicated left-turn lanes in the eastbound, westbound and southbound directions will be provided. In addition, a westbound dedicated right-turn lane is being provided with an overlap phase. No Harmony Grove Village-related improvements are planned for the south leg of the intersection of which the Project access is proposed. As part of the Project, the northbound approach will be widened at this intersection to provide three approach lanes.

A bridge crossing the Escondido Creek, a protected riparian area, is located 140 feet south of Harmony Grove Road on Country Club Drive. Due to the close proximity of this environmentally sensitive area to the northbound approach, there is limited right-of-way to improve this leg of the intersection. Approximately 50 feet of right-of-way is available north and south of the riparian crossing. The existing northbound approach provides for a 10-foot lane in the northbound and southbound directions with a flared opening at Harmony Grove Road. It is recommended that the approach be widened just north of the bridge crossing to provide a 14-foot southbound receiving lane, one 11-foot northbound left-turn lane, one 12-foot through-lane, and one 12-foot dedicated northbound right-turn lane.

The split traffic signal phasing for north/south traffic proposed with the Harmony Grove Village improvements is an inefficient signal phasing profile, but likely proposed due to the vertical curve approaching Harmony Grove Road from northbound Country Club Drive, as well as the current centerline offset between the north and south legs of the intersection. The Harmony Grove Village project network improvements along with the proposed Project improvements to the south leg (widening and realignment) improve intersection operations from LOS F to LOS D (PM peak hour). **Table 11–1** shows the changes in LOS with the improvements.

TABLE 11-1
COUNTRY CLUB DRIVE/ HARMONY GROVE ROAD
SIGNALIZED INTERSECTION OPERATIONS

Intersection	Traffic Control	Scenario	Peak Hour			
			AM		PM	
			Delay ^a	LOS ^b	Delay	LOS
17. Country Club Dr/ Harmony Grove Rd	Signal	Existing + Near-Term Cumulative Projects + Project (<i>Harmony Grove Village Improvements Only</i>)	43.1	D	>100.0	F
		Existing + Near-Term Cumulative Projects + Project (<i>With Additional Proposed Project Improvements</i>)	40.3	D	48.5	D

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.

Figure 11-1 shows the conceptual intersection improvements at Country Club Drive and Harmony Grove Road.

Appendix K contains the post-improvement intersection analysis worksheets.

11.2 Project Access

As mentioned above, the Project will take access from Country Club Drive via two (2) new access roads. The Project proposes to construct a two-way center turn lane providing for left-turns at each of the two (2) access locations along Country Club Drive. As mentioned above in *Section 11.1.1*, this center turn lane would allow for left-turning vehicles to queue outside the flow of thru traffic, thus allowing left-turning vehicles to be passed by thru vehicles without significantly slowing thru traffic and effectively increasing the capacity of Country Club Drive.

11.3 Sight Distance

The two (2) Project entry/exit points are located on either side of a curve on Country Club Drive along the project frontage. In accordance with County Private and Public Road Standards, a review of the corner and stopping sight distance for these locations shall be conducted, and the Project would meet the County's Road Standards for sight distance to ensure that adequate sight distance is met.

11.4 On-site Circulation

As shown in *Figure 2-1* provided earlier in this report, there are several internal roadways proposed within the site. These roadways are all proposed to be constructed to County private-road standards, with paved widths varying from 24-feet to 36-feet within the property. They would be painted with sharrows to indicate to motorists that bicyclists share these roadways with vehicular traffic. A comprehensive system of pedestrian trails would also be provided along these private roadways. Circulation would be provided via an internal loop road comprised of Private Drives "A", "B" and "C". Seven (7) cul-de-sac roads will branch off of this internal loop. The construction of on-site roadways to County standards would facilitate adequate on-site circulation within the Project site. Proposed speed limits within the Project are 25 mph.

The broader internal circulation system is designed to enhance connectivity among the northern, central and southern portions of the site (see *Figure 2-1*). This design is consistent with modern planning principles that seek to minimize cul-de-sac networks, and instead provide physical connections that support vehicular, pedestrian and bicycle circulation. This minimizes undesirable out-of-direction vehicular travel which adds to vehicle miles traveled and greenhouse gas emissions. It also serves to encourage pedestrian and bicycle trips throughout the community.

11.5 Equestrian Crossing

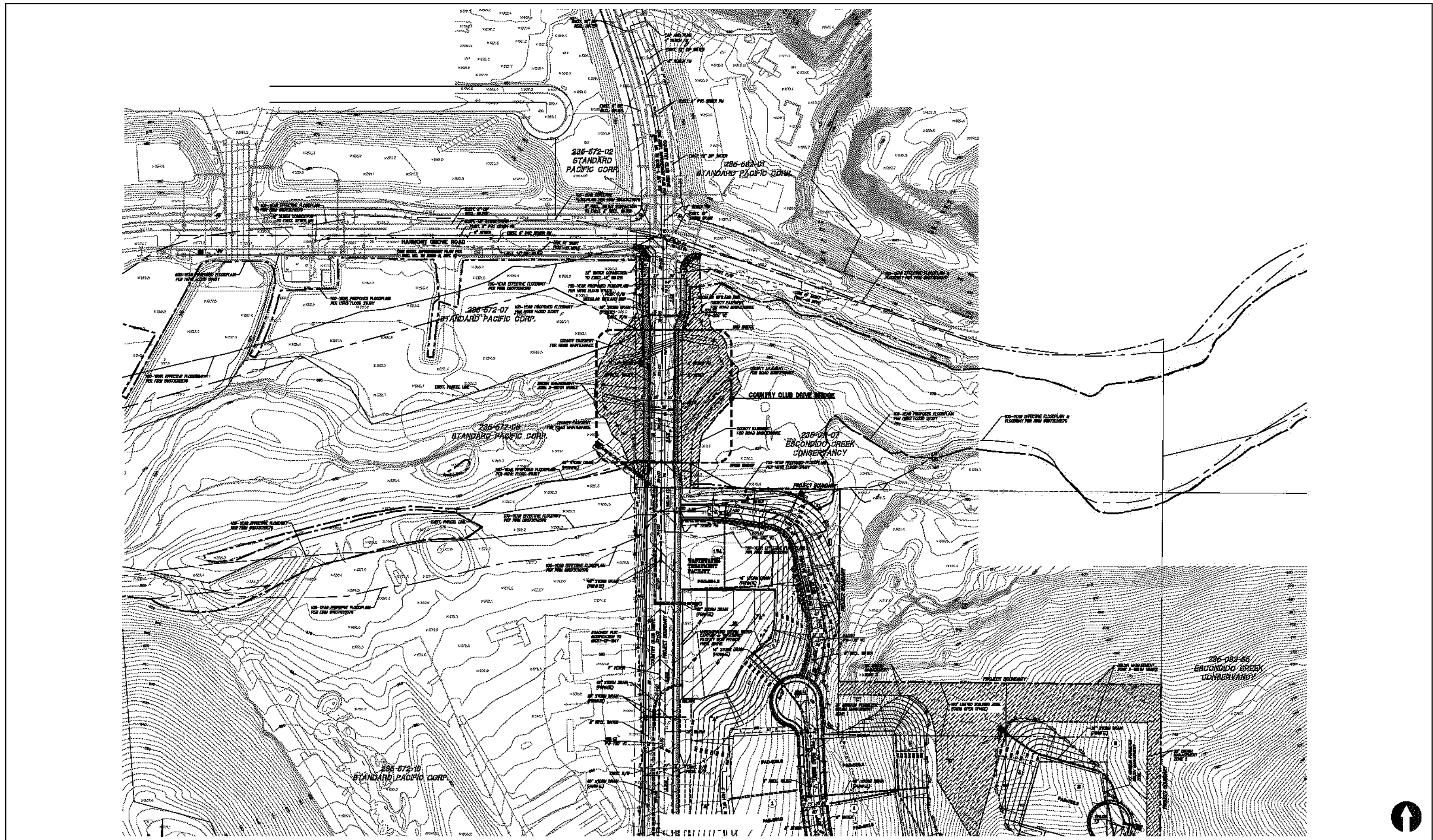
Equestrian riders may need to cross on- and off-site roadways at times. The following is a brief discussion of the implications of the equestrian crossing for each intersection control type.

Unsignalized Intersections: Pedestrian and equestrian crossings at unsignalized intersections are legal at all intersections, whether marked or unmarked. Road users (drivers, pedestrians and equestrian riders) should exercise caution when approaching or crossing unmarked intersections. On-site roads will have lower posted speeds than Country Club Drive and Harmony Grove Road and present fewer hazards for pedestrian and equestrian crossings.

Signalized Intersections: Equestrians rider's access at signalized intersections is controlled and thus provides a better alternative as compared to unsignalized intersections. This is because traffic will stop at a signalized intersection when the equestrian riders get a green signal, whereas the traffic at an unsignalized intersection may not stop.

11.6 Construction Traffic Impacts

The Project will be constructed in phases, and each phase will consist of sub-phases, none of which would generate more traffic than the 4,500 ADT the Project will generate when constructed. As such, no capacity impacts are anticipated to occur during any construction phase. All appropriate work zone traffic control plans shall be prepared to ensure efficient ingress/egress of trucks and equipment, and to maintain access to the degree possible to Country Club Drive during construction.



12.0 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Per the City of Escondido, and County of San Diego's significance thresholds and the analysis methodologies presented in this report, Project-related and cumulative traffic are calculated to cause significant impacts within the study area under the direct and cumulative conditions.

The trigger point at which a Project's impact becomes significant is identified in two steps. First, identify the allowable increase in delay (intersections) or volume-to-capacity (street segments). This is typically the point where the LOS deteriorates to an unacceptable level, or, for locations operating at unacceptable levels without the project, the increase allowed by the jurisdiction at such locations. The second step is to ascertain to the proportion of project traffic that can be added before crossing this threshold. For street segments this is a straightforward calculation of the allowable increase divided by the total project traffic on a particular segment. As intersection delay does not increase in a linear fashion with increased traffic, a trial-and-error process is used to determine the proportion of project traffic corresponding to the threshold.

The City of Escondido requires that physical improvements be implemented for direct impacts where a project reduces LOS below acceptable LOS C thresholds. A fair share payment toward future improvements is required where the addition of project traffic is cumulative to the overall LOS D or worse pre-project conditions.

The County of San Diego requires that projects that significantly increase congestion on roads operating at LOS E or LOS F must provide mitigation. The County Board of Supervisors adopted a Transportation Impact Fee (TIF) ordinance, which provides a mechanism for the County to obtain funding to mitigate anticipated cumulative transportation/circulation impacts, by requiring payment of an impact fee designated in the ordinance. The County updated the TIF Program in December 2012. The TIF Program identifies transportation facilities needed to address cumulative impacts within designate areas of the County (TIF Areas) and then provides for payment of fees to cover a project's "fair share" of the cost. TIF fees are segregated by TIF Area, Region, State Highway, and Ramps and are used to help fund transportation improvements within those identified locations. The Project is located within the San Dieguito TIF Area. The Project should pay the appropriate TIF for cumulatively significant impacted locations.

Mitigation to lower identified significant impacts to less-than-significant levels has been identified for the seven (7) impacts within County jurisdiction and the three (3) impacts within City of Escondido jurisdiction. These identified measures will result in less-than-significant impacts for identified direct and cumulative Project-related effects upon implementation, and will become Conditions of the Project, as appropriate. Because the City of Escondido is a lead agency under CEQA for impacts within their jurisdiction, however; it is the City, and not the County, that has responsibility for approval/assurance of implementation of those improvements. As such, the County cannot guarantee ultimate implementation or timing of City-approved mitigation. Thus, for the purposes of this document, impacts within the City of Escondido are identified as remaining significant and unavoidable pending City action.

The following section lists the significant impacts and provides recommendations for mitigation measures to address operating deficiencies.

12.1 Intersections

12.1.1 *Significant Impacts Prior to Mitigation*

Based on the applied significance criteria, the following impacts were calculated at study area intersections:

City of Escondido

- TRA-1. Intersection #4. Auto Park Way/ Country Club Drive (*Cumulative Only*)
- TRA-2. Intersection #12. Valley Parkway/ Citracado Parkway (*Cumulative Only*)

County of San Diego

- TRA-3. Intersection #18. Harmony Grove Road/ Kauana Loa Drive (*Cumulative Only*)
- TRA-4. Intersection #17. County Club Drive/ Harmony Grove Road (*Direct & Cumulative*)

12.1.2 *Mitigation Measures and Design Considerations*

City of Escondido

- TRA-1. **Intersection #4. Auto Park Way/ Country Club Drive** – Prior to issuance of a building permit for the 293rd dwelling unit, the Project applicant, or its designee, shall restripe the eastbound approach at this intersection to provide one left-turn lane, one shared left-turn/through lane, and one right-turn lane with a signal timing modification to change the east/west approach to “split” phasing. While this improvement would reduce the cumulative impact to less than significant, the County is without jurisdiction to ensure the construction of the additional improvements. Therefore the impact is considered significant and unmitigable to this City of Escondido intersection.
- TRA-2. **Intersection #12. Valley Parkway/ Citracado Parkway** – Prior to issuance of a building permit for the 54th dwelling unit, the Project applicant, or its designee should pay a fair share toward the approved Citracado Parkway Extension Project, which would improve the intersection operations with an additional thru lane in the southbound direction. Alternately, the provision of an eastbound to southbound right-turn overlap phase would improve the AM LOS and reduce the cumulative impacts. However, the City has a right turn restriction for this movement during the AM peak hour, which makes this improvement infeasible. The aforementioned fair share payment towards the Citracado Parkway Extension Project would also reduce the cumulative impact to less than significant. However, the County is without jurisdiction to ensure the construction of the additional improvements, and the City of Escondido has no enforceable program into which the applicant can pay its fair share that would implement the improvements. These are thus concluded to be infeasible mitigation measures, and the impact is considered significant and unmitigable to this City of Escondido intersection.

County of San Diego

- TRA-3. **Intersection #18. Harmony Grove Road/ Kauana Loa Drive** – This intersection lies on a segment identified as a “TIF-eligible facility” in the *County of San Diego TIF Transportation Needs Assessment Report*, September 2012. The Project should make a payment toward the County of San Diego TIF Program. Implementation of this mitigation measure would be expected to reduce this cumulative impact to less than significant.
- TRA-4. **Intersection #17. Country Club Drive/ Harmony Grove Road** – Prior to issuance of a building permit for the 23rd dwelling unit, the Project applicant, or its designee shall widen the northbound approach to provide one (1) left-turn, one (1) thru lane and one (1) dedicated right-turn lane with an overlap phase. In addition, the Project should make a payment toward the County of San Diego TIF Program. Implementation of this mitigation measure would be expected to reduce this cumulative impact to less than significant.

12.2 Roadway Segments

12.2.1 Significant Impacts Prior to Mitigation

Based on the applied significance criteria, the following impacts were calculated on study area roadway segments:

City of Escondido

- TRA-5. Segment #6. Country Club Drive between Auto Park Way and Hill Valley Drive
(Direct & Cumulative)

County of San Diego

- TRA-6. Segment #7. Country Club Drive: Hill Valley Drive to Kauana Loa Drive
(Cumulative Only)
- TRA-7. Segment #11. Harmony Grove Road: Country Club Drive to Harmony Grove Village Parkway (Cumulative Only)
- TRA-8. Segment #12. Harmony Grove Road: Harmony Grove Village Parkway to Kauana Loa Drive (Cumulative Only)
- TRA-9. Segment #13. Harmony Grove Road: Kauana Loa Drive to Enterprise Street (Cumulative Only)
- TRA-10. Segment #14. Harmony Grove Village Parkway: Harmony Grove Road to Citracado Parkway (Cumulative Only)

12.2.2 Mitigation Measures and Design Considerations

City of Escondido

- TRA-5. **Segment #6: Country Club Drive between Auto Park Way and Hill Valley Drive** – Prior to issuance of a building permit for the 80th dwelling unit, the Project applicant, or its designee should widen Country Club Drive to provide a paved width of 36 feet consisting of two travel lanes and a 10-foot striped center turn lane starting

220 feet southwest of Auto Park Way for a length of approximately 830 feet. Improvements would include connecting the existing sidewalk along the northern side of this roadway section with a five-foot sidewalk complete with a six inch curb and gutter and providing a four-foot decomposed granite pathway along the south side of this segment with a six inch asphalt berm. With the additional 12 feet added to the paved width, the roadway capacity of this Local Collector would increase to 15,000 ADT. While this improvement would reduce the cumulative impact to less than significant, the County is without jurisdiction to ensure the construction of the additional improvements. Therefore the impact is considered significant and unmitigable to this City of Escondido roadway.

County of San Diego

- TRA-6. **Segment #7. Country Club Drive: Hill Valley Drive to Kauana Loa Drive** – Prior to issuance of a building permit for the 176th dwelling unit, the Project applicant, or its designee shall widen Country Club Drive at the Country Club Drive/ Eden Valley Lane intersection to provide a dedicated northbound left-turn lane onto Eden Valley Lane. The provision of this left-turn lane would provide a refuge lane for left-turning vehicles thus improving the flow of northbound through traffic and reducing the potential for vehicular conflict due to the slowing of northbound traffic. Implementation of this mitigation measure would be expected to reduce this cumulative impact to less than significant. .
- TRA-7. **Segment #11. Harmony Grove Road: Country Club Drive to Harmony Grove Village Parkway** – This segment is identified as a “TIF-eligible facility” in the *County of San Diego TIF Transportation Needs Assessment Report*, September 2012. The Project should make a payment toward the County of San Diego TIF Program. Implementation of this mitigation measure would be expected to reduce this cumulative impact to less than significant.
- TRA-8. **Segment #12. Harmony Grove Road: Harmony Grove Village Parkway to Kauana Loa Drive** – This segment is identified as a “TIF-eligible facility” in the *County of San Diego TIF Transportation Needs Assessment Report*, September 2012. The Project should make a payment toward the County of San Diego TIF Program. Implementation of this mitigation measure would be expected to reduce this cumulative impact to less than significant.
- TRA-9. **Segment #13. Harmony Grove Road: Kauana Loa Drive to Enterprise Street** – Harmony Grove Road between Kauana Loa Drive and Enterprise Street is not a part of the General Plan roadway network and is an unclassified roadway on the Mobility Element. Therefore, it does not have any planned improvements beyond its existing configuration. However, the construction of the Citracado Parkway Extension Project within the City of Escondido would ultimately cul-de-sac Harmony Grove Road just east of Kauana Loa Drive, resulting in the reduction of the volume along this roadway and improve operations to acceptable LOS D or better. The completion of the Citracado Parkway Extension Project, would result in a substantial shift in traffic patterns as studied extensively in the Citracado Parkway Final EIR, approved February 2012 and in the City’s certified General Plan Update EIR. However, the

City has no present plans to construct the Citracado Parkway Extension Project nor does the City have a financing plan to fund this improvement into which the applicant can pay its fair share. Also, the County is without jurisdiction to ensure the construction of the Citracado Parkway Extension Project and has no plans to make any improvements beyond its current configuration.

The segment is bound by two intersections: #18 Harmony Grove Road/ Kauana Loa Drive (County) and #5 Harmony Grove Road/ Enterprise Street (City). The former also lies upon the portion of Harmony Grove Road that is classified as a TIF-eligible facility. Therefore, the Project's TIF payment mitigates the shared intersection, which improves operations on all adjacent legs, both TIF and Non-TIF eligible. As such, cumulative improvements from TRA-3 will apply to this impact, TRA-9, and implementation of mitigation measure TRA-3 would be expected to reduce this cumulative impact to less than significant.

- TRA-10. **Segment #14. Harmony Grove Village Parkway: Harmony Grove Road to Citracado Parkway** – This segment of Harmony Grove Village Parkway is currently built to 2.1E Community Collector standards providing 16,200 ADT of capacity and is classified on the Mobility Element to be improved to 2.2C Community Collector standards providing 19,000 ADT of capacity. However, this section of Harmony Grove Village Parkway is not currently included in the *County of San Diego TIF Transportation Needs Assessment Report*, September 2012, identifying it as a TIF-eligible facility.

The segment is bound by two intersections: #19 Harmony Grove Road/ Harmony Grove Village Parkway (County) and #6 Avenida Del Diablo/ Citracado Parkway (City). Both of these intersections are calculated to operate at LOS C or better during both peak hours with both Project and cumulative project traffic volumes, and as such, the subject roadway segment would also be expected to operate at correspondingly acceptable LOS. Nonetheless, the cumulative contribution exceeds the Count's published threshold and a cumulative impact is reported.

Prior to issuance of a building permit for the 135th dwelling unit, the Project applicant, or its designee shall provide a northbound to eastbound right-turn overlap phase at the Harmony Grove Road/ Harmony Grove Village Parkway signalized intersection (#19). Even though this intersection is calculated to operate at LOS C or better during the peak hours with both Project and cumulative project traffic volumes, the construction of the northbound to eastbound right-turn overlap phase at this intersection would provide additional improvements to both AM and PM peak hour delays by 1.3 and 2.1 seconds, respectively. As intersections are considered primary indicators of the overall roadway network operations, this improvement would be considered beneficial to the subject segment, and would be expected to reduce this cumulative impact to less than significant.

12.3 Project Design Features

The following traffic design features are recommended as part of the Project to minimize traffic impacts.

12.3.1 Country Club Drive

Improvements to Country Club Drive along the Project frontage are proposed as part of Project design. As discussed in *Section 11.1.1* of this report, improvements to Country Club Drive along the Project frontage are proposed as part of Project design. As discussed in *Section 11.1.1* of this report, Project access is proposed via Country Club Drive south of Harmony Grove Road. The Project will improve the roadway to a “Public Enhanced Residential Collector” to include a three-foot parkway on the west side of the road, a ten-foot parkway on the east side, two eight-foot shoulders, two twelve-foot travel lanes and a 14-center turn lane/striped median. Three approach lanes at the Country Club Drive/ Harmony Grove Road intersection are also proposed: a left-turn lane, thru lane, and dedicated right-turn lane. The left-turn and right-turn lanes will provide 100 feet of storage. The paved width will be 54 feet in a dedicated right-of-way of 67 feet. A design speed exception is requested to reduce the design speed from 30 MPH to 27.5 MPH, which would not affect the segment’s capacity to serve the approximately 600 ADT on this segment. A copy of the design exception is included in *Appendix J*.

The Project is designed to accommodate a system of interconnected trails and pathways that encourage pedestrian and bicycle activity and establish important links to Harmony Grove Village, the Del Dios Highlands Preserve, and the Elfin Forest Recreational Reserve. The intersection improvements and proposed changes to Country Club Drive are designed to enhance circulation for pedestrians, bicyclists, and equestrian riders. Crosswalks, clear delineations between vehicular routes and pedestrian/equestrian/bicyclist routes, and pedestrian and equestrian-level push buttons would be provided. Internal private roadways servicing the Project will include pedestrian trails and sharrows to indicate that bicyclists share the roadway with vehicles.

12.4 Impacts and Mitigation Summary Table

Table 12–1 summarizes the significant impacts, corresponding mitigation measures, and post-mitigation analysis.

TABLE 12-1
SUMMARY OF SIGNIFICANT IMPACTS / MITIGATION MEASURES

MM# ¹	Location	Impact Type	Mitigation Measure	Mitigated to Below a Significant Level?	
				LOS	Yes/No? ²
Intersections					
TRA-1	Intersection #4. Auto Park Way/ Country Club Drive <i>(City of Escondido)</i>	Cumulative	Restripe the eastbound approach at this intersection to provide one left-turn lane, one shared left-turn/through lane, and one right-turn lane with a signal timing modification to change the east/west approach to “split” phasing. However, the Project cannot assure that another jurisdiction will allow the improvement.	C/C	No
TRA-2	Intersection #12. Valley Parkway/ Citracado Parkway <i>(City of Escondido)</i>	Cumulative	The Project could pay a fair share toward the approved Citracado Parkway Extension Project to provide an additional thru lane in the southbound direction or provide an eastbound to southbound overlap phase. However, neither measure is feasible.	D	No
TRA-3	Intersection #18. Harmony Grove Road/ Kauana Loa Drive <i>(County of San Diego)</i>	Cumulative	This segment is identified as a “TIF-eligible facility” in the <i>County of San Diego TIF Transportation Needs Assessment Report</i> , September 2012. The Project should make a payment toward the County of San Diego TIF Program.	D	Yes
TRA-4	Intersection #17. Country Club Drive/ Harmony Grove Road <i>(County of San Diego)</i>	Direct & Cumulative	Widen the northbound approach to provide one (1) left-turn, one (1) thru lane and one (1) dedicated right-turn lane with an overlap phase. In addition, the Project should make a payment toward the County of San Diego TIF Program.	D	Yes

TABLE 12-1
SUMMARY OF SIGNIFICANT IMPACTS / MITIGATION MEASURES

MM# ¹	Location	Impact Type	Mitigation Measure	Mitigated to Below a Significant Level?	
				LOS	Yes/No? ²
Segments					
TRA-5	Segment #6: Country Club Drive between Auto Park Way and Hill Valley Drive <i>(City of Escondido)</i>	Direct & Cumulative	Country Club Drive should be widened to provide a paved width of 36 feet consisting of two travel lanes and a 10-foot striped center turn lane starting 220 feet southwest of Auto Park Way for a length of approximately 830 feet. Improvements would include connecting the existing sidewalk along the northern side of this roadway section with a five-foot sidewalk complete with a six inch curb and gutter and providing a four-foot decomposed granite pathway along the south side of this segment with a six inch asphalt berm. With the additional 12 feet added to the paved width, the roadway capacity of this Local Collector would increase to 15,000 ADT. However, the Project cannot assure that another jurisdiction will allow the improvement.	C	No
TRA-6	Segment #7. Country Club Drive: Hill Valley Drive to Kauana Loa Drive <i>(County of San Diego)</i>	Cumulative	The Project should widen Country Club Drive at the Country Club Drive/ Eden Valley Lane intersection to provide a dedicated northbound left-turn lane onto Eden Valley Lane. The provision of this left-turn lane would provide a refuge lane for left-turning vehicles thus improving the flow of northbound through traffic and reducing the potential for vehicular conflict due to the slowing of northbound traffic.	D	Yes
TRA-7	Segment #11. Harmony Grove Road: Country Club Drive to Harmony Grove Village Parkway <i>(County of San Diego)</i>	Cumulative	This segment is identified as a “TIF-eligible facility” in the <i>County of San Diego TIF Transportation Needs Assessment Report</i> , September 2012. The Project should make a payment toward the County of San Diego TIF Program.	D	Yes
TRA-8	Segment #12. Harmony Grove Road: Harmony Grove Village Parkway to Kauana Loa Drive <i>(County of San Diego)</i>	Cumulative	This segment is identified as a “TIF-eligible facility” in the <i>County of San Diego TIF Transportation Needs Assessment Report</i> , September 2012. The Project should make a payment toward the County of San Diego TIF Program.	D	Yes

TABLE 12-1
SUMMARY OF SIGNIFICANT IMPACTS / MITIGATION MEASURES

MM# ¹	Location	Impact Type	Mitigation Measure	Mitigated to Below a Significant Level?	
				LOS	Yes/No? ²
Segments (Continued)					
TRA-9	Segment #13. Harmony Grove Road: Kauana Loa Drive to Enterprise Street (County of San Diego)	Cumulative	This segment is not identified as a “TIF-eligible facility” in the <i>County of San Diego TIF Transportation Needs Assessment Report</i> , September 2012. However, this segment is bound on its western terminus by intersection #18 (Harmony Grove Road/ Kauana Loa Drive) which is on the TIF-eligible portion of Harmony Grove and will itself be mitigated with TRA-3. This improves operations on all adjacent legs, both TIF and Non-TIF eligible, and thus cumulative improvements from TRA-3 will apply to this impact, TRA-9, and implementation of mitigation measure TRA-3 would be expected to reduce this cumulative impact to less than significant.	-	Yes
TRA-10	Segment #14. Harmony Grove Village Parkway: Harmony Grove Road to Citracado Parkway (County of San Diego)	Cumulative	This segment is not identified as a “TIF-eligible facility” in the <i>County of San Diego TIF Transportation Needs Assessment Report</i> , September 2012. This segment of Harmony Grove Village Parkway is currently built to 2.1E Community Collector standards providing 16,200 ADT of capacity and is classified on the Mobility Element to be improved to 2.2C Community Collector standards providing 19,000 ADT of capacity. Since this section of Harmony Grove Village Parkway is not currently included in the County of San Diego TIF Transportation Needs Assessment Report, it is recommended that the Project provide a northbound to eastbound right-turn overlap phase at the Harmony Grove Road/ Harmony Grove Village Parkway signalized intersection (#19). This will improve both AM and PM peak hour delays at this adjacent intersection by 1.3 and 2.1 seconds, respectively, thereby improving street system operations including this impact, TRA-10.	-	Yes

TABLE 12-1
SUMMARY OF SIGNIFICANT IMPACTS / MITIGATION MEASURES

MM# ¹	Location	Impact Type	Mitigation Measure	Mitigated to Below a Significant Level?	
				LOS	Yes/No? ²
Access					
—	Country Club Drive along the Project Frontage	—	Improvements to Country Club Drive along the Project frontage are proposed as part of Project design. As discussed in <i>Section 11.1.1</i> of this report, Project access is proposed via Country Club Drive south of Harmony Grove Road. The Project will improve the roadway to a “Public Enhanced Residential Collector” to include a three-foot parkway on the west side of the road, a ten-foot parkway on the east side, two eight-foot shoulders, two twelve-foot travel lanes and a 14-center turn lane/striped median. Three approach lanes at the Country Club Drive/ Harmony Grove Road intersection are also proposed: a left-turn lane, thru lane, and dedicated right-turn lane. The left-turn and right-turn lanes will provide 100 feet of storage. The paved width will be 54 feet in a dedicated right-of-way of 67 feet. A design speed exception is requested to reduce the design speed from 30 MPH to 27.5 MPH.	—	—

Footnotes:

1. MM# = Mitigation measure number.
2. Mitigation to lower identified significant impacts to less-than-significant levels has been identified above for the seven impacts within County jurisdiction and the three impacts within City of Escondido jurisdiction. These identified measures will result in less-than-significant impacts for identified direct and cumulative Project-related effects upon implementation, and will become Conditions of the Project, as appropriate. Because the City of Escondido is a lead agency under CEQA for impacts within their jurisdiction, however; it is the City, and not the County, that has responsibility for approval/assurance of implementation of those improvements. As such, the County cannot guarantee ultimate implementation or timing of City-approved mitigation. Thus, for the purposes of this document, impacts within the City of Escondido are identified as remaining significant and unavoidable pending City action.

13.0 REFERENCES AND LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

13.1 References

The following references were used in preparing this Traffic Impact Study.

Highway Capacity Manual (HCM) 2000 and 2010

SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002

County of San Diego Guidelines for Determining Significance—Transportation and Traffic, dated August 24, 2011

County of San Diego Report Format & Content Requirements—Transportation and Traffic, dated August 24, 2011

County of San Diego Public Road Standards

SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region, March 2, 2000

City of Escondido General Plan Update Mobility Element

County of San Diego General Plan Mobility Element – San Dieguito Planning Area

Harmony Grove Village Conditions of Approval, 2007

Citracado Parkway Specific Alignment Plan and Final Environmental Impact Report, approved April 2012

13.2 List of Preparers

John Boarman, P.E., Principal—Linscott, Law & Greenspan, Engineers

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José Nuñez, GIS Specialist—Linscott, Law & Greenspan, Engineers

13.3 Organizations Contacted

County of San Diego, Department of Public Works Transportation Division

City of Escondido, Community Development Department – Planning

Caltrans – Operations Division

TECHNICAL APPENDICES
HARMONY GROVE VILLAGE SOUTH
County of San Diego, California
April 6, 2017

Prepared for the County of San Diego

PSD2015-SP-15-002

LLG Ref. 3-14-2314

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APPENDICES

APPENDIX

- A. Harmony Grove Village Conditions of Approval and Grading and Improvement Plan for Country Club Drive
- B. Intersection and Segment Manual Count Sheets, Caltrans PeMS Volumes, Harmony Grove Village Project Assignment
- C. *Highway Capacity Manual* Intersection Methodology
- D. County of San Diego and City of Escondido Roadway Classification Tables
- E. Existing Intersection Analysis Worksheets
- F. Trip Generation Comparison
- G. Existing + Project Intersection Analysis Worksheets
- H. Existing + Cumulative Projects Intersection Analysis Worksheets
- I. Existing + Project + Cumulative Projects Intersection Analysis Worksheets
- J. Country Club Drive Design Exception Request
- K. Post-Improvement Intersection Analysis Worksheets

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APPENDIX A

HARMONY GROVE VILLAGE CONDITIONS OF APPROVAL AND GRADING AND IMPROVEMENT PLAN FOR COUNTRY CLUB DRIVE

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RESOLUTION OF SAN DIEGO COUNTY)
BOARD OF SUPERVISORS)
CONDITIONALLY APPROVING)
VESTING TENTATIVE MAP NO. 5365RPL²)



WHEREAS, Vesting Tentative Map No. 5365RPL² proposing the division of property located on both sides of Harmony Grove Road at the intersection with Country Club Drive and generally described as:

A portion of Section 30, a portion of the northeast quarter and the southeast quarter of Section 25, a portion of the southeast quarter of Section 24, and a portion of the southwest quarter of Section 19, all in Township 12 South, Range 2 West, San Bernardino Meridian;

was filed with the County of San Diego pursuant to the Subdivision Map Act and San Diego County Subdivision Ordinance on October 27, 2006; and

WHEREAS, on February 7, 2007, the Board of Supervisors of the County of San Diego pursuant to Section 81.307 of the San Diego County Subdivision Ordinance held a duly advertised public hearing on said Tentative Map and received for its consideration, documentation, written and oral testimony, recommendations from all affected public agencies, and heard from all interested parties present at said hearing; and

WHEREAS, the Board of Supervisors of the County of San Diego has determined that the conditions hereinafter enumerated are necessary to ensure that the subdivision and the improvement thereof will comply with the Subdivision Map Act and conform to all ordinances, plans, rules, standards, and improvement and design requirements of San Diego County.

IT IS RESOLVED, THEREFORE, that the Board of Supervisors of the County of San Diego hereby makes the following findings as supported by the minutes, maps, exhibits, and documentation of said Tentative Map all of which are herein incorporated by reference:

1. The Vesting Tentative Map is consistent with all elements of the San Diego County General Plan and with the (21) Specific Plan Area (1.6) Land Use Designation of the North County Metropolitan Subregional Plan because it proposes a mixed use rural village in accordance with the provision of the Harmony Grove Specific Plan (SP 04-003) with a residential density that does not exceed 1.6 dwelling units per acre and complies with the provisions of the State Subdivision Map Act and the Subdivision Ordinance of the San Diego County Code;

IT IS FURTHER RESOLVED, DETERMINED, AND ORDERED, that based on these findings, said Vesting Tentative Map is hereby approved subject to the following conditions:

- A. The approval of this Tentative Map TM 5365RPL² shall take effect and be in force on March 9, 2007, but only if GPA 07-001, SP 04-003 and R04-010, also are approved and become effective that day.

The approval of this Tentative Map expires on March 9, 2010 at 4:00 p.m., unless prior to that date a request for a Time Extension has been filed and is subsequently approved as provided by Section 81.308 of the County Subdivision Ordinance

PLEASE NOTE: Condition compliance, preparation of grading and improvement plans and final mapping may take a year or more to complete. Applicants are advised to begin this process at least one year prior to expiration of this Tentative Map.

PLEASE NOTE: Time Extension requests cannot be processed without updated project information including new Department of Environmental Health certification of septic systems. Since Department of Environmental Health review may take several months, applicants anticipating the need for Time Extensions for their projects are advised to submit applications for septic certification to the Department of Environmental Health several months prior to the expiration of their Tentative Maps.

- B. The "Standard Conditions for Tentative Subdivision Maps" approved by the Board of Supervisors on June 16, 2000, and filed with the Clerk as Resolution No. 00-199, shall be made conditions of this Tentative Map approval. Only those exceptions to the Standard Conditions set forth in this Resolution or shown on the Tentative Map will be authorized.
- C. The following conditions shall be complied with before a Final Map is approved by the Board of Supervisors and filed with the County Recorder of San Diego County (and, where specifically, indicated, shall also be complied with prior to issuance of grading or other permits as specified):

PLANS AND SPECIFICATIONS

(Street Improvements and Access)

1. Standard Conditions 1 through 12.
2. Specific Conditions:

- a. Prior to approval of the First Final Map, improve or agree to improve and provide security for **Harmony Grove Road (SC 1370)**, on-site, within the project boundary, in accordance with Public Road Standards for a Town Collector, to a graded width of seventy-four feet (74') with fifty-four feet (54') of asphalt concrete pavement over approved base with Portland cement concrete curb and gutter with face of curb at twenty-seven feet (27') from centerline to the satisfaction of the Director of Public Works.
- b. Prior to approval of the First Final Map, improve or agree to improve and provide security for Harmony Grove Road (SC 1370), from Country Club Drive easterly and northerly to Village Road northeast of POA 41, as an interim improvement, to a graded width of thirty-six feet (36') and an improved width of (28') of asphalt concrete pavement over approved base. The existing pavement may remain and shall be widened with asphalt concrete to provide a constant width of twenty-eight feet (28') to the satisfaction of the Director of Public Works. Where the twenty-eight foot improved width is infeasible, the applicant shall submit a design exception to the Satisfaction of the Director of Public Works.
- c. Prior to approval of the First Final Map, improve or agree to improve and provide security for **Country Club Drive (SC 1375)**, within and along the project frontage north of Village Drive, in accordance with Public Road Standards for a Rural Light Collector, to a graded width of sixty feet (60') with forty-feet (40') of asphalt concrete pavement over approved base with Portland cement concrete curb, gutter and sidewalks with face of curb at twenty (20') from centerline to the satisfaction of the Director of Public Works. Where infeasible or inappropriate to meet the 40-mph design speed as specified in the Public Road Standards for a Rural Light Collector, the applicant may submit to the Director of Public Works a design exception that is in substantial conformance with the "Safety Enhancement Alternative" exhibit submitted to the Board of Supervisors February 7, 2007.
- d. Prior to approval of the First Final Map, improve or agree to improve and provide security for **Village Road and Country Club Drive (SC 1375)**, from Harmony Grove Road northerly along existing Country Club Drive to the easterly subdivision boundary at existing Harmony Grove Road, in accordance with Public Road Standards for a Town Collector, to a graded width of seventy-four (74') with fifty-four feet (54') of asphalt concrete pavement over approved base with Portland cement concrete curb, gutter and sidewalks with face of curb at twenty-seven feet (27') from centerline to the satisfaction of the Director of Public Works.

- e. **Improve roads or agree to improve and provide security for them, with the recordation of the Final Map for the Unit the road is within, abuts, or provides access to.**
- f. Prior to approval of the Final Map for Unit 1, improve or agree to improve and provide security for **'R' Street**, from Country Club Drive to 'Q' Street in accordance with Public Road Standards for a modified Residential Collector, to a graded width of sixty feet (60') with thirty-six feet (36') of asphalt concrete pavement over approved base with Portland cement concrete curb, gutter and five foot (5') sidewalks to the satisfaction of the Director of Public Works.
- g. Prior to approval of the Final Map for Unit 1, improve or agree to improve and provide security for **'Q' Street**, from Village Road to the cul-de-sac southwest of Lot 574 in accordance with Public Road Standards for a modified Residential Road, to a graded width of fifty-one feet (51') with thirty-six feet (36') of asphalt concrete pavement over approved base with Portland cement concrete curb, gutter and five foot (5') sidewalk to the satisfaction of the Director of Public Works.
- h. 'Q' Street shall terminate with a cul-de-sac southwest of Lot 574, graded to a radius of forty-six feet (46') and surfaced to a radius of thirty-eight feet (38') with asphalt concrete pavement over approved base with Portland cement concrete curb gutter and sidewalk with face of curb at thirty-eight feet (38') from the radius point.
- i. Prior to approval of the Final Map for Unit 1, improve or agree to improve and provide security for the unnamed private easement roads serving Lots 571 – 574, 576 – 625, 634 - 650 to an improved width of twenty-four feet (24') with asphalt concrete pavement over approved base with asphalt concrete dike at twelve feet (12') from centerline. The improvement and design standards of Section 3.1(C) of the County Standards for Private Streets for one hundred (100) or less trips shall apply to the satisfaction of DPLU Fire and the Director of Public Works.
- j. Provide standard street knuckle (modified as necessary) in accordance with Regional Standard Drawing DS-15 for 'Q' Street at Lot 656 to the satisfaction of the Director of Public Works.
- k. The unnamed private easement roads serving Lots 571 – 574, 576 – 625, 634 - 650 each shall terminate to the satisfaction of DPLU Fire and the County of San Diego, Director of Public Works.

- uuuu. POA 39 shall terminate to the satisfaction of DPLU Fire and the County of San Diego, Director of Public Works.
 - vvvv. Prior to approval of the Final Map for Unit 11, improve or agree to improve and provide security for the unnamed private easement road serving Lots 1 and 2 to a graded width of twenty eight feet (28') and to an improved width of twenty-four feet (24') with asphalt concrete pavement over approved base with asphalt concrete curb and gutter at twelve feet (12') from centerline. The improvement and design standards of Section 3.1(C) of the County Standards for Private Streets for one hundred (100) or less trips shall apply to the satisfaction of the Director of Public Works.
 - wwwv. The unnamed private easement road serving Lots 1 and 2 shall terminate to the satisfaction of DPLU Fire and the County of San Diego, Director of Public Works.
 - xxxx. Asphalt concrete surfacing material shall be hand-raked and compacted to form smooth tapered connections along all edges including those edges adjacent to soil. The edges of asphalt concrete shall be hand-raked at 45 degrees or flatter, so as to provide a smooth transition next to existing soil, including those areas scheduled for shoulder backing. The above shall be done to the satisfaction of the Director of Public Works.
 - yyyy. Adequate sight distance per County Standards shall be provided at all proposed intersections to the satisfaction of the Director of Public Works.
 - zzzz. Where height of fill bank for a 2:1 slope is greater than twelve feet (12'); or where height of fill bank for a 1.5:1 slope is greater than ten feet (10'), guardrail shall be installed per CALTRANS standards to the satisfaction of the Director of Public Works.
 - aaaaa. If pathways are dedicated, improve the pathway, or agree to improve and provide security for them, with the approval of the unit they are within. Contact the DPW Pathway Coordinator, CIP Project Development at (858) 694-2830 for design requirements within proposed public right-of-way.
3. Off-Site Traffic Mitigations:
- a. Prior to approval of the First (1st) Final Map, contribute a fair share to the City of Escondido towards the future upgrade of Hale Avenue to City Local Collector Standards, between West 9th Street and Harmony Grove Road. Upgrade the road to City Local Collector Standards.

- b. Prior to approval of the First (1st) Final Map, improve or agree to improve and provide security for an additional Northbound through-lane and a dedicated northbound right-turn lane at the Via Rancho Parkway / Valley Parkway intersection as depicted in Figure 1.1-31 of the Draft Environmental Impact Report dated June 21, 2006.
- c. Prior to approval of the First (1st) Final Map, modify the traffic signal at the Citracado Parkway / Valley Parkway intersection to install left-turn phasing on all four approaches to the satisfaction of both the City of Escondido and the County of San Diego.
- d. Prior to approval of the First (1st) Final Map, contribute a fair share to the County of San Diego and City of Escondido towards the widening of Valley Parkway between Citracado Parkway and Via Rancho Parkway to 4-lanes to the satisfaction of both the City of Escondido and the County of San Diego.
- e. Prior to approval of the First (1st) Final Map, contribute a fair share toward the City of Escondido / Caltrans planned improvement of the SR-78 / Nordahl Road interchange to provide a six-lane bridge with dual left-turn lanes onto the ramps.
- f. Prior to approval of the First (1st) Final Map, contribute a fair share toward the City of Escondido's planned widening of Nordahl Road between SR-78 and East Mission Road to six lanes.
- g. Prior to approval of the First (1st) Final Map, contribute a fair share to the City of Escondido towards the re-striping of eastbound West 9th Street at Auto Parkway to provide a right-turn lane, a shared through / right-turn lane, and left-turn lane.
- h. Prior to approval of the First (1st) Final Map, modify the traffic signal at the West 9th Street / Autopark Way intersection to provide a right-turn overlap phasing at the eastbound approach.
- i. Prior to approval of the First (1st) Final Map, contribute a fair share to the City of Escondido and Caltrans towards the future improvements of the I-15 / Via Rancho Parkway interchange.
- j. Prior to approval of the First (1st) Final Map, contribute a fair share to the City of Escondido towards the future signalization of the Citracado Parkway / Country Club Drive intersection.

- k. Prior to approval of the First (1st) Final Map, agree to construct and provide security for a traffic signal at the Harmony Grove Road / Village Road intersection when signal warrants are met.
- l. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for an eastbound left-turn lane on Harmony Grove Road at Village Road.
- m. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for a traffic signal at the Hale Avenue / Harmony Grove Road intersection.
- n. Prior to approval of the First (1st) Final Map, contribute a fair share to the City of Escondido towards improvements to the Hale Avenue / Harmony Grove Road intersection (dual eastbound left-turn lanes).
- o. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for a traffic signal and an eastbound left-turn lane at the Hale Avenue / Avenida Del Diablo intersection to the satisfaction of the City Engineer, or cul-de-sac Avenida Del Diablo just east of Citracado Parkway to the satisfaction of the City Engineer.
- p. Prior to approval of the First (1st) Final Map, agree to construct and provide security for a traffic signal at the Harmony Grove Road / 'V' Street (main project entrance) intersection when signal warrants are met.
- q. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for dedicated left-turn and right-turn lanes on Harmony Grove Road at the Harmony Grove Road / 'V' Street (main project entrance) intersection.
- r. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for dedicated left-turn and right-turn lanes in the southbound direction on 'V' Street at the Harmony Grove Road / 'V' Street (main project entrance) intersection.
- s. Prior to approval of the First (1st) Final Map, provide or agree to provide and secure for the lane configuration depicted on Figure 15-1 of the approved Traffic Impact Analysis by Linscott, Law, and Greenspan dated July 18, 2006 to the Country Club Drive / Village Road road segments. Ensure that County intersection standards are met and agree to install and provide security of the installation of signals when warrants are met to the satisfaction of the Director of Public Works.

- t. Prior to approval of the First (1st) Final Map, construct or agree to construct and provide security for an eastbound left-turn pocket on Harmony Grove Road at the Harmony Grove Road / 'A' Street (Wilgen Road) intersection.
- u. Prior to approval of the First (1st) Final Map, prepare traffic control plans to manage construction traffic and to identify designated truck routes to the satisfaction of the City of Escondido and Director of Public Works.
- v. Prior to approval of the First (1st) Final Map, improve or agree to improve and provide security for **new Village Road**, from the proposed Village Road / Harmony Grove Road intersection to the future extension of Citracado Parkway as shown in Figure 2-3 of the Traffic Impact Analysis by Linscott, Law, and Greenspan, dated July 18, 2006 and Figure 1.1-30 of the Draft Environmental Impact Report dated June 21, 2006, consistent with the City of Escondido's Citracado Parkway Alignment Study to the satisfaction of the City of Escondido and the Director of Public Works.
- w. Prior to approval of the First (1st) Final Map, improve or agree to improve and provide security for **Citracado Parkway**, from the future extension of Citracado Parkway to existing Citracado Parkway at Avenida Del Diablo as shown in Figure 2-3 of the Traffic Impact Analysis by Linscott, Law, and Greenspan, dated July 18, 2006 and Figure 1.1-30 of the Draft Environmental Impact Report dated June 21, 2006, consistent with the City of Escondido's Citracado Parkway Alignment Study to the satisfaction of the City of Escondido and the Director of Public Works.
- x. Prior to approval of the First (1st) Final Map, improve or agree to improve and provide security for **Country Club Drive (SC 1375)**, from the northerly project boundary at existing Country Club Drive to Kauana Loa Drive, in accordance with Public Road Standards for a Rural Light Collector, to a minimum interim graded width of forty-eight feet (48') and a minimum interim improved width of twenty-eight feet (28') of asphalt concrete pavement over approved base. The existing pavement may remain and shall be widened with asphalt concrete to provide a constant minimum width of twenty-eight feet (28') to the satisfaction of the Director of Public Works. Where infeasible or inappropriate to meet the 40-mph design speed as specified in the Public Road Standards for a Rural Light Collector, the applicant may submit to the Director of Public Works a design speed exception that is in substantial conformance with the "Safety Enhancement Alternative" exhibit submitted to the Board of Supervisors February 7, 2007.

- y. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the City of Escondido toward the improvement of Harmony Grove Road between Enterprise Street and Howard Avenue to Local Collector Standards, including dedicated left-turn lanes on Harmony Grove Road and Enterprise Street, Howard Avenue and Hale Avenue.
- z. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the City of Escondido toward the improvement of Harmony Grove Road between Howard Avenue and Hale Avenue to Local Collector Standards, including dedicated left-turn lanes on Harmony Grove Road and Enterprise Street, Howard Avenue and Hale Avenue.
- aa. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the City of Escondido toward the restriping of eastbound West 9th Street at Auto Park Way to provide a right-turn lane, a shared through / right-turn lane and a left-turn lane.
- bb. Prior to approval of the Final Map for the One Hundredth (100th) Unit, modify the signal at the Valley Parkway / Auto Park Way intersection to provide right-turn overlap phasing at the eastbound approach to the satisfaction of the City of Escondido.
- cc. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the City of Escondido toward the widening of Valley Parkway between West 11th Street and Avenida Del Diablo to 4 lanes.
- dd. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the County of San Diego toward an additional Northbound through lane and a dedicated Northbound right-turn lane at the Via Rancho Parkway / Valley Parkway intersection.
- ee. Prior to approval of the Final Map for the One Hundredth (100th) Unit, contribute a fair share to the City of Escondido toward the signalization of the Hale Avenue / West 11th Street intersection.
- ff. Prior to approval of the Final Map for the Two Hundredth (200th) Unit, contribute a fair share to the City of Escondido toward the City's planned widening of Nordahl Road between SR-78 westbound ramps and East Mission Road (including the bridge) to six lanes.
- gg. Prior to approval of the Final Map for the Two Hundredth (200th) Unit, contribute a fair share to the City of Escondido toward the City's planned improvements of the Nordahl Road / East Mission Road intersection.

- hh. Prior to approval of the Final Map for the Two Hundredth (200th) Unit, contribute a fair share to the City of Escondido toward the widening of West 9th Street to City of Escondido Collector Standards between Hale Avenue and Valley Parkway.
- ii. Prior to approval of the Final Map for the Three-hundredth (300th) Unit, contribute a fair share to the City of Escondido towards the widening of Andreason Drive to City of Escondido 4-lane Collector Standards.
- jj. Prior to approval of the Final Map for the Three-hundredth (300th) Unit, contribute a fair share to the City of Escondido towards the re-striping of the eastbound approach on West 9th Street at Auto Park Way to a right-turn lane, a shared through / right-turn lane, and a left-turn lane with the provision of a right-turn overlap phasing on the eastbound approach.
- kk. Prior to approval of the Final Map for the Three-hundredth (300th) Unit, construct or agree to construct and provide security for a cul-de-sac or turn restrictions on Avenida Del Diablo, from Citracado Parkway to Hale Avenue, east of Citracado Parkway to the satisfaction of the City of Engineer.
- ll. Prior to approval of the Final Map for the Three-hundredth (300th) Unit, contribute a fair share to the Caltrans towards the future improvements of SR-78 between Twin Oaks Valley Road and I-15.
- mm. Prior to approval of the Final Map for the Five-hundredth (500th) Unit, contribute a fair share to the City of Escondido towards the signalization of the Harmony Grove Road / Enterprise Street intersection, the provision of dedicated left-turn lanes on each approach and northbound right-turn overlap phasing.
- nn. Prior to approval of the Final Map for the Six-hundredth (600th) Unit, contribute a fair share to the City of Escondido / Caltrans towards the future improvements of the Valley Parkway / I-15 Interchange.
- oo. Prior to approval of the Final Map for the Six-hundredth (600th) Unit, contribute a fair share to Caltrans towards the future improvement of I-15, between SR-78 and SR-56.

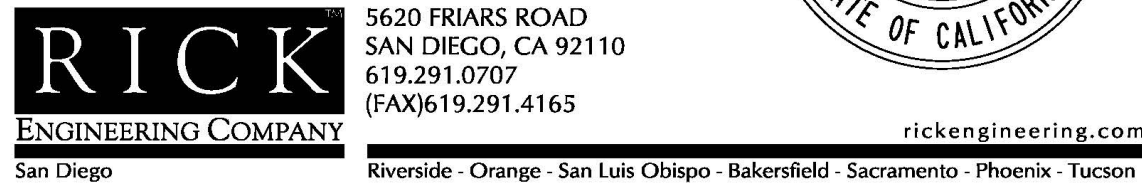
(Drainage and Flood Control)

- 4. Standard Conditions 13 through 18.
- 5. Specific Conditions:

1. A PERMIT SHALL BE OBTAINED FROM THE COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS FOR ANY WORK WITHIN THE STREET RIGHT-OF-WAY.
2. THE STRUCTURAL SECTION SHALL BE IN ACCORDANCE WITH COUNTY OF SAN DIEGO STANDARDS AND AS APPROVED BY THE MATERIALS LABORATORY.
3. APPROVAL OF THESE IMPROVEMENT PLANS AS SHOWN DOES NOT CONSTITUTE APPROVAL OF ANY CONSTRUCTION OUTSIDE THE PROJECT BOUNDARY.
4. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO CONSTRUCTION OF DIKE, BERM, CURB, CROSS-GUTTER AND PAVING.
5. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO OTHER EXISTING FACILITIES EXCEPT AS SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN HEREON AND ANY OTHER WHICH IS NOT ON RECORD OR NOT SHOWN ON THESE PLANS.
6. THE LOCATION AND ELEVATION OF IMPROVEMENTS TO BE MET BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK. THE CONTRACTOR WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
7. THE CONTRACTOR SHALL NOTIFY THE SAN DIEGO GAS & ELECTRIC COMPANY PRIOR TO STARTING WORK NEAR COMPANY FACILITIES AND SHALL COORDINATE HIS WORK WITH COMPANY REPRESENTATIVES. NOTICE: ALL ELECTRICAL AND GAS SERVICES WITHIN THIS PROJECT ARE "UNDERGROUND INSTALLATIONS." FOR LOCATION OF ELECTRICAL CABLES AND GAS PIPING AND APPURTENANCES CONTACT THE SAN DIEGO GAS AND ELECTRIC COMPANY-TELEPHONE: 232-4252.
8. THE CONTRACTOR SHALL NOTIFY THE AT&T TELEPHONE COMPANY PRIOR TO STARTING WORK NEAR COMPANY FACILITIES AND SHALL COORDINATE HIS WORK WITH COMPANY REPRESENTATIVES. NOTICE: ALL TELEPHONE SERVICES WITHIN THIS PROJECT BOUNDARY ARE "UNDERGROUND INSTALLATIONS." FOR LOCATION OF CABLES AND APPURTENANCES CONTACT THE AT&T TELEPHONE COMPANY TELEPHONE: 1-800-422-4133.
9. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CONTACT THE UTILITY AGENCIES, ADVISE THEM OF THE PROPOSED IMPROVEMENTS, AND BEAR THE COST OF RELOCATIONS, IF NEEDED.
10. ALL TELEVISION SERVICES WITHIN THIS PROJECT ARE "UNDERGROUND INSTALLATIONS." FOR LOCATION OF CABLES AND APPURTENANCES CONTACT: COX CABLE T.V. 262-5793 EXT. 5198
11. POWER SOURCES AND RUNS SERVING STREET LIGHTS SHALL BE SHOWN ON THE "RECORD PLAN" IMPROVEMENT DRAWINGS. ALL POWER SOURCES SHALL BE LOCATED WITHIN THE DEDICATED RIGHT-OF-WAY, OR WITHIN EASEMENTS DEDICATED TO THE COUNTY OF SAN DIEGO
12. NO PAVING SHALL BE DONE UNLESS ALL EXISTING POWER POLES ARE RELOCATED OUTSIDE THE AREA TO BE PAVED.
13. PRIVATE ROAD IMPROVEMENTS SHOWN HEREON ARE FOR INFORMATION ONLY. COUNTY OFFICIALS SIGNATURE HEREON DOES NOT CONSTITUTE APPROVAL OR RESPONSIBILITY OF ANY KIND FOR THE DESIGN OR CONSTRUCTION OF THESE PRIVATE IMPROVEMENTS. (IF APPLICABLE)
14. ALL SIGNS TO BE ALUMINUM WITH 3M HIGH INTENSITY TYPE REFLECTIVE FACE OR EQUIVALENT.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY STRIPING, PAVEMENT MARKERS, OR LEGENDS OBLITERATED BY THE CONSTRUCTION OF THIS PROJECT.
16. ALL NEW STRIPING AND SANDBLASTING OF REDUNDANT STRIPING SHALL BE DONE BY THE CONTRACTOR.
17. ALL CUT AND FILL SLOPES OVER THREE (3) FEET CREATED BY GRADING FOR STREETS AND DRIVEWAYS SHALL BE HYDROSEEDING WITH SAN DIEGO COUNTY APPROVED MIXTURE. PROPOSED SLOPES SHALL BE PROTECTED WITH WATER TRAP UNTIL MIXTURE GERMINATES AND TOX GROWTH IS ESTABLISHED.
18. ASPHALT CONCRETE SURFACING MATERIAL SHALL BE HAND-RAKED AND COMPACTED TO FORM SMOOTH TAPERED CONNECTIONS ALL EDGES ADJACENT TO SOIL. THE EDGES OF ASPHALT CONCRETE SHALL BE HAND-RAKED AT 45 DEGREES OR FLATTER, SO AS TO PROVIDE A SMOOTH TRANSITION NEXT TO EXISTING SOIL, INCLUDING THOSE AREAS SCHEDULED FOR SHOULDER BACKING. THE ABOVE SHALL BE DONE TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.
19. CONTRACTOR SHALL APPLY FOR A TRAFFIC CONTROL PERMIT TWO WEEKS PRIOR TO COMMENCEMENT OF WORK. NO WORK SHALL COMMENCE UNTIL ISSUANCE OF SAID PERMIT. FOR INFORMATION CALL (658) 874-4025. THE TRAFFIC CONTROL PERMIT SHALL REQUIRE SPECIFICATIONS FOR THE INFORMATIONAL SIGNS.
20. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND THE COUNTY OF SAN DIEGO SPECIAL PROVISIONS AND SPECIFICATIONS FOR THE IMPROVEMENT OF NEW STREETS.

235-031-41,42; 235-032-35; 232-500-07; 232-511-14,15,18

COUNTRY CLUB DRIVE FROM THE NORTHERLY PROJECT BOUNDARY
(VTM NO. 5365) TO MT. WHITNEY ROAD.



Key map showing the layout of Country Club Drive. The map includes the following labels and features:

- EXISTING 12" WM G.V.** (Existing 12-inch water main ground vertical line)
- S.L. #2** (Station Line #2)
- MT. WHITNEY RD.** (Mountain Whitney Road)
- KADANA LOA DR.** (Kadana Loa Drive)
- COUNTRY CLUB DR.** (Country Club Drive)
- COUNTRY CLUB DRIVE** (Country Club Drive)
- P.O.C. WATER EX. 8" WM G.V.** (Point of Connection Water Existing 8-inch water main ground vertical line)
- N 17° 43' 30" E 150.00'** (Bearing and distance for a boundary line)
- S.L. #1** (Station Line #1)
- KEY** (Key to the map)
- SHEET** (Sheet number)
- STREET** (Street name)
- SCALE: 1" = 160'** (Scale of the map)



BY: _____ DATE: _____
PETER J. KIESECKER, SENIOR VP

STANDARD PACIFIC CORP.
15360 BARRANCA PARKWAY
IRVINE, CA 92618
PHONE: (949) 789-1600
FAX: (949) 789-1609

SHEET NUMBER (12)
STREET LIGHT



CALL 811 BEFORE YOU DIG

DESCRIPTION	SHEET NO.
TITLE SHEET.....	1
NOTES, DETAILS, TYP. SEC.....	2
* DETAILS.....	3
DEMOLITION PLANS.....	4
IMP. & GRADING PLANS.....	5-7
* DRIVEWAY DETAILS.....	8
* EROSION CONTROL PLANS.....	9-10
* SIGNING & STRIPING PLANS.....	11
* DETOUR PLAN.....	12
* NOT REVIEWED OR APPROVED BY RDDMW	

NO.	DESCRIPTION:	APPROVED BY:	DATE:

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE
ACCORDING TO THESE PLANS, THE CURRENT SAN DIEGO COUNTY
ENGINEER DEPARTMENT STANDARD SPECIFICATIONS AND
SPECIAL PROVISIONS FOR IMPROVEMENT OF SUBDIVISION STREETS
AND STANDARD DRAWINGS

1. STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2009 EDITION (GREENBOOK) AND SUPPLEMENTS.
2. RINCON DEL DIABLO MUNICIPAL WATER DISTRICT-GENERAL SPECIFICATIONS FOR CONSTRUCTION OF WATER TRANSMISSION FACILITIES AND RECYCLED WATER SERVICE RULES AND REGULATIONS PER RESOLUTION 2001-927, 7TH EDITION.

1. SAN DIEGO REGIONAL STANDARD DRAWINGS (2009)
2. RINCON DEL DIABLO MUNICIPAL WATER DISTRICT STANDARD DRAWINGS

EXISTING IMPROVEMENTS

IMPROVEMENT	STANDARD DWGS.	SYMBOL
EXISTING STORM DRAIN		
EXISTING MANHOLE/CLEANOUT		
EXISTING EDGE OF PAVEMENT		
EXISTING POWER POLE		
EXISTING FIRE HYDRANT		
EXISTING GATE VALVES		
EXISTING FENCE		

IMPROVEMENT	STANDARD DWGS.	SYMBOL
5' CONTOUR		450
CUT SLOPE		
FILL SLOPE		
DAYLIGHT LINE		
BROW DITCH	MODIFIED D-75, SEE SHT. 2	
VEGETATED SWALE		
TYPE "F" DIKE	SDG-100, G-5	
AC PAVEMENT	PER SOILS ENGINEER	
AC OVERLAY (6" MAX.)		
REMOVE EXISTING PAVEMENT		
4" PCC MEDIAN		
TYPE 4 RETAINING WALL	C-4	
STORM DRAIN		
TYPE "B" STRAIGHT HEADWALL	D-32, D-35	
WING TYPE HEADWALL	D-34, D-35	
RIP-RAP ENERGY DISSIPATOR	SDD-100, D-40	
TYPE "B" INLET (MODIFIED W/ CLEARWATER FILTER INSERT)	D-2	
WATER MAIN		
RECYCLED WATER MAIN		
2" COMBINATION AIR & VACUUM ASSEMBLY	RDDMWD W-9B, W-10	
WATER CAP	RDDMWD W-18	
GATE VALVES	RDDMWD W-11	
CONCRETE THRUST BLOCK	RDDMWD W-18	
STREET SURVEY MONUMENT	M-10	
STREET LIGHT (TYPE 15)	SDE-104E-1-E-2	
WOOD/WIRE FENCE (PVT)		
ASPHALT CONCRETE DRIVEWAY	DS-07	

TO IMPROVE THE HORIZONTAL GEOMETRY OF COUNTRY CLUB DRIVE IN
ACCORDANCE WITH THE CONDITIONS OF TM-4365 IN THE COUNTY
OF SAN DIEGO, CALIFORNIA

CENTERLINE FOR THIS PROJECT IS INTENDED TO BE A CONSTRUCTION
CENTERLINE AND IS NOT BASED ON PRIOR ROAD SURVEYS OR MAPS.

THE ISSUANCE OF THIS PERMIT/APPROVAL BY THE COUNTY OF SAN DIEGO DOES NOT AUTHORIZE THE APPLICANT FOR SAID PERMIT/APPROVAL TO VIOLATE ANY FEDERAL, STATE, OR COUNTY LAWS, ORDINANCES, REGULATIONS, OR POLICIES INCLUDING, BUT NOT LIMITED TO, THE FEDERAL ENDANGERED SPECIES ACT AND ANY AMENDMENTS THERETO.

J - 16412

SHEET 1	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	12 SHEETS

OFFSITE IMPROVEMENT PLANS FOR:
HARMONY GROVE VILLAGE

HARMONY GROVE VILLAGE
COUNTRY CLUB DRIVE

CALIFORNIA COORDINATE INDEX _____ 334-1785

APPROVED FOR _____ ENGINEER OF WORK _____

MOHAMAD K. FAKHRRIDDINE
COUNTY ENGINEER

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APPENDIX B

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS, CALTRANS PEMS VOLUMES, HARMONY GROVE VILLAGE ASSIGNMENT

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Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



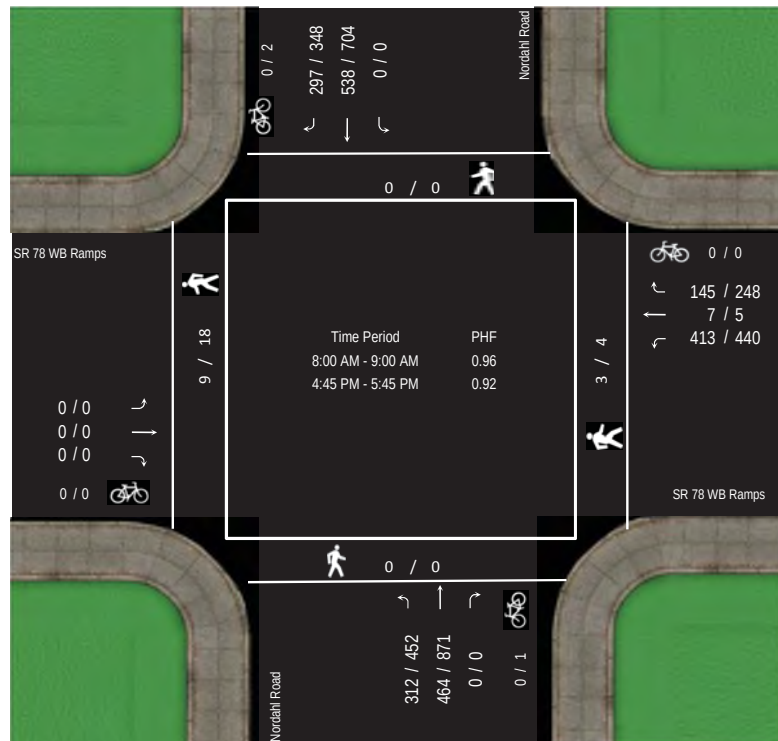
Location: SR 78 WB Ramps @ Nordahl Road

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: SR 78 WB Ramps @ Nordahl Road

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	77	107	0	19	1	125	0	72	75	0	0	0	476
7:15 AM	80	109	0	19	2	89	0	80	84	0	0	0	463
7:30 AM	80	138	0	23	2	107	0	103	79	0	0	0	532
7:45 AM	69	148	0	21	0	108	0	110	94	0	0	0	550
8:00 AM	73	138	0	20	0	100	0	127	85	0	0	0	543
8:15 AM	63	131	0	41	2	102	0	114	63	0	0	0	516
8:30 AM	80	126	0	40	3	99	0	107	93	0	0	0	548
8:45 AM	81	143	0	44	2	112	0	116	71	0	0	0	569
Total	603	1,040	0	227	12	842	0	829	644	0	0	0	4,197

AM Intersection Peak Hour : 8:00 AM - 9:00 AM

Intersection PHF : 0.96

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	297	538	0	145	7	413	0	464	312	0	0	0	2,176
PHF	0.92	0.94	#####	0.82	0.58	0.92	#####	0.91	0.84	#####	#####	#####	0.96
Movement PHF		0.93			0.89			0.92		#DIV/0!			0.96

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	111	136	0	63	0	90	0	162	115	0	0	0	677
4:15 PM	89	156	0	34	0	60	0	189	108	0	0	0	636
4:30 PM	94	154	0	42	0	103	0	196	125	0	0	0	714
4:45 PM	75	178	0	61	0	108	0	227	107	0	0	0	756
5:00 PM	86	199	0	58	1	134	0	222	134	0	0	0	834
5:15 PM	83	195	0	65	0	84	0	212	111	0	0	0	750
5:30 PM	104	132	0	64	4	114	0	210	100	0	0	0	728
5:45 PM	98	188	0	64	1	91	0	181	86	0	0	0	709
Total	740	1338	0	451	6	784	0	1,599	886	0	0	0	5,804

PM Intersection Peak Hour : 4:45 PM - 5:45 PM

Intersection PHF : 0.92

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	348	704	0	248	5	440	0	871	452	0	0	0	3068
PHF	0.84	0.884	#####	0.954	0.313	0.821	#####	0.959	0.843	#####	#####	#####	0.92
Movement PHF		0.92			0.90			0.93		#DIV/0!			0.92



Turn Count Summary

Accurate Video Counts Inc
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(619) 987-5136



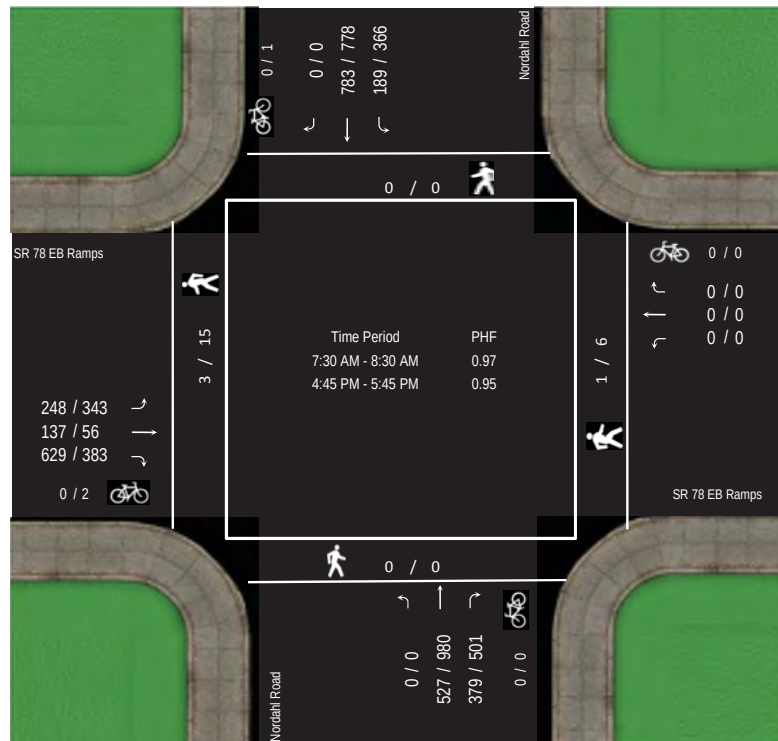
Location: SR 78 EB Ramps @ Nordahl Road

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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Location: SR 78 EB Ramps @ Nordahl Road

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	194	38	0	0	0	93	101	0	189	38	46	699
7:15 AM	0	154	44	0	0	0	117	105	0	133	66	59	678
7:30 AM	0	183	62	0	0	0	105	128	0	166	47	54	745
7:45 AM	0	212	44	0	0	0	94	128	0	145	30	76	729
8:00 AM	0	193	45	0	0	0	87	140	0	136	27	72	700
8:15 AM	0	195	38	0	0	0	93	131	0	182	33	46	718
8:30 AM	0	181	44	0	0	0	89	132	0	133	32	68	679
8:45 AM	0	177	78	0	0	0	98	111	0	111	1	76	652
Total	0	1,489	393	0	0	0	776	976	0	1,195	274	497	5,600

AM Intersection Peak Hour : 7:30 AM - 8:30 AM

Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	783	189	0	0	0	379	527	0	629	137	248	2,892
PHF	#####	0.92	0.76	#####	#####	#####	0.90	0.94	#####	0.86	0.73	0.82	0.97
Movement PHF		0.95		#DIV/0!			0.97			0.95			0.97

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	144	82	0	0	0	180	205	0	73	3	72	759
4:15 PM	0	112	104	0	0	0	136	210	0	65	5	87	719
4:30 PM	0	151	106	0	0	0	132	221	0	78	4	100	792
4:45 PM	0	168	118	0	0	0	140	233	0	55	2	101	817
5:00 PM	0	234	99	0	0	0	131	253	0	67	6	103	893
5:15 PM	0	164	115	0	0	0	130	236	0	71	4	87	807
5:30 PM	0	212	34	0	0	0	100	258	0	190	44	52	890
5:45 PM	0	174	105	0	0	0	103	184	0	38	1	83	688
Total	0	1359	763	0	0	0	1,052	1,800	0	637	69	685	6,365

PM Intersection Peak Hour : 4:45 PM - 5:45 PM

Intersection PHF : 0.95

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	778	366	0	0	0	501	980	0	383	56	343	3407
PHF	#####	0.831	0.775	#####	#####	#####	0.895	0.95	#####	0.504	0.318	0.833	0.95
Movement PHF		0.86		#DIV/0!			0.96			0.68			0.95



Turn Count Summary

Accurate Video Counts Inc
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Location: Mission Road @ Auto Park Way

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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Location: Mission Road @ Auto Park Way

	AM Period (7:00 AM - 9:00 AM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00 AM	51	205	95	43	60	11	7	77	21	35	47	80
7:15 AM	57	166	87	61	70	11	9	104	32	40	70	65
7:30 AM	68	155	81	46	111	13	4	113	51	41	74	74
7:45 AM	60	156	98	53	87	25	7	124	61	39	85	68
8:00 AM	60	204	98	45	71	14	10	94	44	37	65	53
8:15 AM	59	136	89	54	80	12	12	87	41	46	67	66
8:30 AM	63	117	62	73	60	9	8	96	36	26	63	53
8:45 AM	49	156	64	77	56	7	5	86	34	32	51	45
Total	467	1,295	674	452	595	102	62	781	320	296	522	504

AM Intersection Peak Hour : 7:15 AM - 8:15 AM Intersection PHF : 0.94

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	245	681	364	205	339	63	30	435	188	157	294	260	3,261
PHF	0.90	0.83	0.93	0.84	0.76	0.63	0.75	0.88	0.77	0.96	0.86	0.88	0.94
Movement PHF			0.89			0.89			0.85			0.93	0.94

	PM Period (4:00 PM - 6:00 PM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00 PM	56	110	46	91	84	11	8	216	62	31	109	87
4:15 PM	50	90	48	81	97	12	10	184	72	44	108	86
4:30 PM	75	99	45	117	80	10	18	222	83	32	123	73
4:45 PM	96	89	34	102	76	7	6	194	74	36	106	87
5:00 PM	100	88	47	119	100	11	11	252	89	42	115	63
5:15 PM	87	71	46	100	106	9	9	159	71	46	141	88
5:30 PM	79	86	29	73	72	10	13	178	70	41	108	84
5:45 PM	79	79	31	55	81	6	10	124	59	33	100	84
Total	622	712	326	738	696	76	85	1,529	580	305	910	652

PM Intersection Peak Hour : 4:30 PM - 5:30 PM Intersection PHF : 0.93

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	358	347	172	438	362	37	44	827	317	156	485	311	3854
PHF	0.90	0.876	0.915	0.92	0.854	0.841	0.611	0.82	0.89	0.848	0.86	0.884	0.93
Movement PHF			0.93			0.91			0.84			0.87	0.93



Turn Count Summary

Accurate Video Counts Inc
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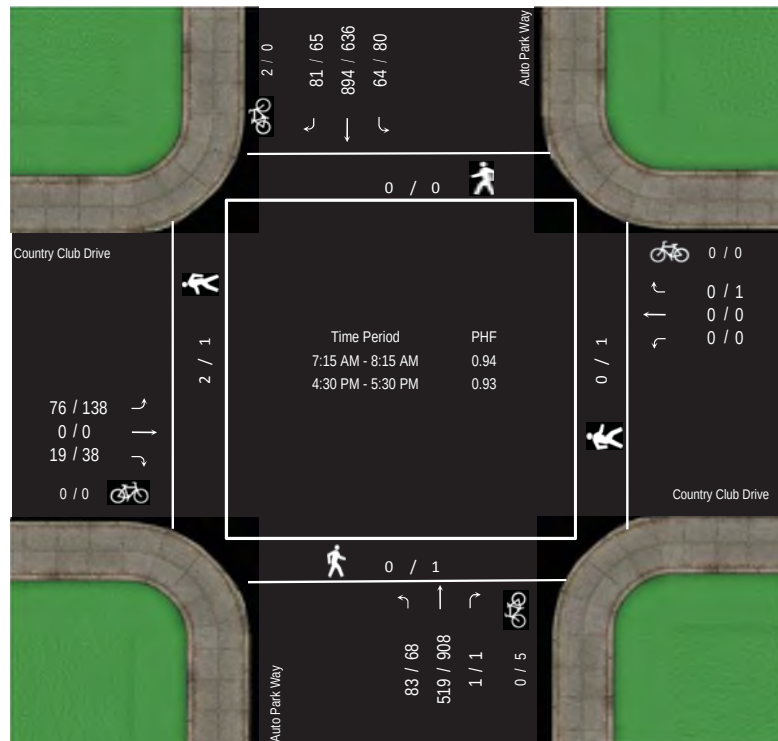
Location: Country Club Drive @ Auto Park Way

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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Location: Country Club Drive @ Auto Park Way

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	20	238	18	0	0	0	0	83	15	11	0	17	402
7:15 AM	17	213	15	0	0	0	0	102	7	6	0	19	379
7:30 AM	16	225	8	0	0	0	0	154	20	6	0	21	450
7:45 AM	11	229	26	0	0	0	1	139	27	5	0	22	460
8:00 AM	37	227	15	0	0	0	0	124	29	2	0	14	448
8:15 AM	18	180	16	0	0	0	0	106	14	4	0	16	354
8:30 AM	14	156	26	2	0	0	1	101	10	11	0	17	338
8:45 AM	20	176	17	0	0	0	0	92	19	10	0	17	351
Total	153	1,644	141	2	0	0	2	901	141	55	0	143	3,182

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.94

	Southbound			Westbound			Northbound			Eastbound			TOTAL
Volume	81	894	64	0	0	0	1	519	83	19	0	76	1,737
PHF	0.55	0.98	0.62	#####	#####	#####	0.25	0.84	0.72	0.79	#####	0.86	0.94
Movement PHF		0.93		#DIV/0!			0.87			0.88			0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	21	148	17	0	0	1	0	218	21	5	0	35	466
4:15 PM	20	152	27	0	0	0	0	179	18	7	0	31	434
4:30 PM	22	150	21	0	0	0	0	222	13	8	0	33	469
4:45 PM	11	155	23	0	0	0	1	237	23	13	0	38	501
5:00 PM	14	166	26	0	0	0	0	251	13	11	0	40	521
5:15 PM	18	165	10	1	0	0	0	198	19	6	0	27	444
5:30 PM	21	122	24	0	0	0	0	175	18	10	0	21	391
5:45 PM	11	138	13	0	0	1	0	163	15	4	0	22	367
Total	138	1196	161	1	0	2	1	1,643	140	64	0	247	3,593

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.93

	Southbound			Westbound			Northbound			Eastbound			TOTAL
Volume	65	636	80	1	0	0	1	908	68	38	0	138	1935
PHF	0.74	0.958	0.769	0.25	#####	#####	0.25	0.904	0.739	0.731	#####	0.863	0.93
Movement PHF		0.95		0.25			0.93			0.86			0.93



Turn Count Summary

Accurate Video Counts Inc
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Location: Enterprise Street @ Harmony Grove Road

Date of Count: Tuesday, June 03, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-01213



Vehicular Count

Accurate Video Counts Inc
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Location: Enterprise Street @ Harmony Grove Road

AM Period (7:00 AM - 9:00 AM)							
		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
7:00 AM		58	77	35	8	22	30
7:15 AM		70	74	48	12	17	32
7:30 AM		92	92	50	16	17	24
7:45 AM		90	96	53	16	16	28
8:00 AM		88	101	48	7	12	45
8:15 AM		51	80	41	16	15	18
8:30 AM		77	61	37	6	20	18
8:45 AM		59	67	30	14	19	15
Total		585	648	342	95	138	210

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.95**

		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
Volume		340	363	199	51	62	129
PHF		0.92	0.90	0.94	0.80	0.91	0.72
Movement PHF		0.93		0.91		0.84	

PM Period (4:00 PM - 6:00 PM)							
		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
4:00 PM		29	34	94	20	16	62
4:15 PM		33	38	104	13	13	52
4:30 PM		44	67	97	21	21	80
4:45 PM		50	61	126	18	15	58
5:00 PM		29	57	124	18	19	75
5:15 PM		37	51	114	14	18	74
5:30 PM		30	51	85	11	16	56
5:45 PM		32	56	91	7	8	44
Total		284	415	835	122	126	501

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.98**

		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
Volume		160	236	461	71	73	287
PHF		0.8	0.881	0.915	0.845	0.869	0.897
Movement PHF		0.89		0.92		0.89	



Turn Count Summary

Accurate Video Counts Inc
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(619) 987-5136



Location: Harmony Grove Village Parkway @ Avenida Del Diablo and Citracado Park

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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Location: Harmony Grove Village Parkway @ Avenida Del Diablo and Citracado

	AM Period (7:00 AM - 9:00 AM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00 AM	0	0	0	0	0	39	26	0	0	0	1	0
7:15 AM	0	0	1	0	1	36	22	0	0	3	2	1
7:30 AM	0	0	0	0	1	38	32	0	2	5	3	0
7:45 AM	0	0	0	0	1	29	37	0	1	2	3	0
8:00 AM	0	0	0	0	1	37	46	0	1	0	3	0
8:15 AM	0	0	0	0	0	25	24	0	0	1	2	0
8:30 AM	0	0	0	0	0	10	14	0	1	1	2	0
8:45 AM	0	0	0	0	1	12	19	0	1	1	3	0
Total	0	0	1	0	5	226	220	0	6	13	19	1

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.88

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	1	0	4	140	137	0	4	10	11	1	308
PHF	#####	#####	0.25	#####	1.00	0.92	0.74	#####	0.50	0.50	0.92	0.25	0.88
Movement PHF			0.25			0.92			0.75			0.69	0.88

	PM Period (4:00 PM - 6:00 PM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00 PM	0	1	0	0	3	32	21	0	1	0	6	1
4:15 PM	0	0	0	0	2	33	26	0	0	0	2	0
4:30 PM	0	0	0	0	4	33	19	0	1	0	3	0
4:45 PM	0	0	1	1	4	33	18	0	1	1	5	0
5:00 PM	0	0	0	1	3	36	21	0	2	0	1	0
5:15 PM	0	0	0	0	2	37	21	0	2	0	4	0
5:30 PM	0	0	0	0	5	31	19	0	0	0	3	0
5:45 PM	0	0	0	0	0	30	30	0	0	0	4	0
Total	0	1	1	2	23	265	175	0	7	1	28	1

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.96

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	1	2	13	139	79	0	6	1	13	0	254
PHF	#####	#####	0.25	0.5	0.813	0.939	0.94	#####	0.75	0.25	0.65	#####	0.96
Movement PHF			0.25			0.96			0.92			0.58	0.96



Turn Count Summary

Accurate Video Counts Inc
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(619) 987-5136



Location: W. Valley Parkway @ I-15 NB Ramps

Date of Count: Tuesday, August 19, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0244



Vehicular Count

Accurate Video Counts Inc
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(619) 987-5136



Location: W. Valley Parkway @ I-15 NB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	52	173	0	68	0	53	0	113	77	536
7:15 AM	0	0	0	39	206	0	86	0	73	0	140	74	618
7:30 AM	0	0	0	54	187	0	90	0	88	0	135	69	623
7:45 AM	0	0	0	38	183	0	90	0	79	0	190	48	628
8:00 AM	0	0	0	45	178	0	78	1	60	0	163	83	608
8:15 AM	0	0	0	40	202	0	83	2	62	0	173	100	662
8:30 AM	0	0	0	46	133	0	95	0	57	0	141	95	567
8:45 AM	0	0	0	46	163	0	85	1	48	0	192	84	619
Total	0	0	0	360	1,425	0	675	4	520	0	1,247	630	4,861

AM Intersection Peak Hour : 7:30 AM - 8:30 AM

Intersection PHF : 0.95

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	177	750	0	341	3	289	0	661	300	2,521
PHF	#####	#####	#####	0.82	0.93	#####	0.95	0.38	0.82	#####	0.87	0.75	0.95
Movement PHF	#DIV/0!			0.96			0.89			0.88			0.95

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	70	216	0	83	0	33	0	284	182	868
4:15 PM	0	0	0	84	236	0	72	0	46	0	210	205	853
4:30 PM	0	0	0	78	223	0	69	1	29	0	166	234	800
4:45 PM	0	0	0	61	222	0	84	0	39	0	205	233	844
5:00 PM	0	0	0	75	249	0	56	1	55	0	218	188	842
5:15 PM	0	0	0	59	236	0	71	0	51	0	222	180	819
5:30 PM	0	0	0	80	268	0	87	0	36	0	222	171	864
5:45 PM	0	0	0	65	209	0	63	0	44	0	164	219	764
Total	0	0	0	572	1,859	0	585	2	333	0	1,691	1,612	6,654

PM Intersection Peak Hour : 4:45 PM - 5:45 PM

Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	275	975	0	298	1	181	0	867	772	3369
PHF	#####	#####	#####	0.859	0.91	#####	0.856	0.25	0.823	#####	0.976	0.828	0.97
Movement PHF	#DIV/0!			0.90			0.98			0.94			0.97



Turn Count Summary

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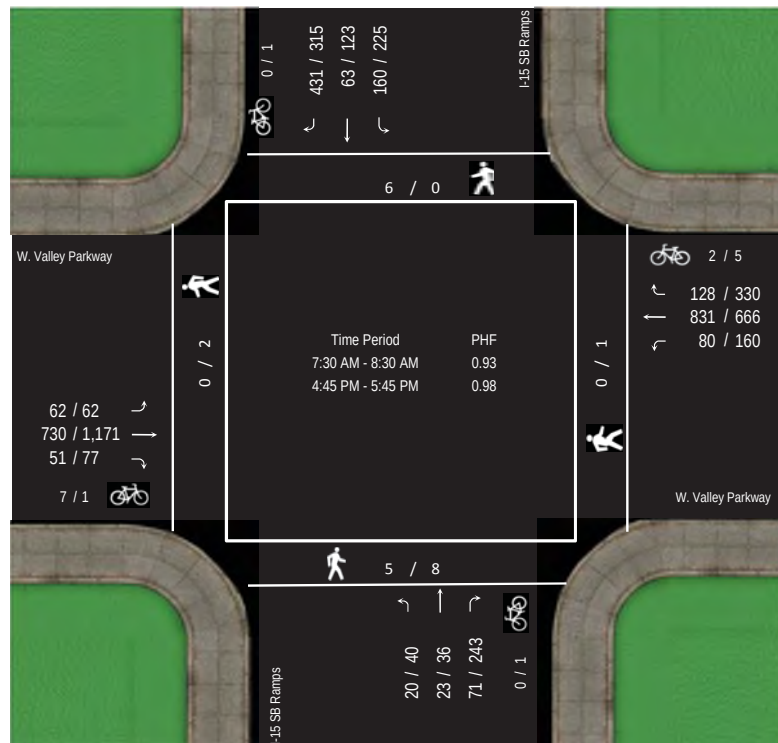
Location: W. Valley Parkway @ I-15 SB Ramps

Date of Count: Tuesday, August 19, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0244



Vehicular Count

Accurate Video Counts Inc
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Location: W. Valley Parkway @ I-15 SB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	131	17	51	47	165	14	10	1	5	8	129	5	583
7:15 AM	130	11	41	51	216	12	15	5	4	12	158	6	661
7:30 AM	94	11	27	31	234	10	16	6	2	10	161	16	618
7:45 AM	113	17	49	22	210	30	22	4	6	6	167	21	667
8:00 AM	121	10	47	29	191	18	12	3	4	16	187	15	653
8:15 AM	103	25	37	46	196	22	21	10	8	19	215	10	712
8:30 AM	124	39	57	31	135	24	21	15	11	26	158	13	654
8:45 AM	108	27	72	32	153	26	36	14	13	14	168	9	672
Total	924	157	381	289	1,500	156	153	58	53	111	1,343	95	5,220

AM Intersection Peak Hour : 7:30 AM - 8:30 AM Intersection PHF : 0.93

	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Volume	431	63	160	128	831	80	71	23	20	51	730	62
PHF	0.89	0.63	0.82	0.70	0.89	0.67	0.81	0.58	0.63	0.67	0.85	0.74
Movement PHF	0.91			0.94			0.73			0.86		

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	82	24	59	80	122	47	61	20	8	18	346	16	883
4:15 PM	64	24	57	85	133	64	47	14	9	13	311	17	838
4:30 PM	62	41	54	81	127	44	38	9	7	20	308	15	806
4:45 PM	95	30	60	76	142	43	63	10	10	18	315	21	883
5:00 PM	79	38	56	93	167	44	58	8	6	15	292	15	871
5:15 PM	63	34	53	65	185	37	47	11	13	21	302	17	848
5:30 PM	78	21	56	96	172	36	75	7	11	23	262	9	846
5:45 PM	77	35	53	58	152	43	55	10	14	16	275	6	794
Total	600	247	448	634	1,200	358	444	89	78	144	2,411	116	6,769

PM Intersection Peak Hour : 4:45 PM - 5:45 PM Intersection PHF : 0.98

	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Volume	315	123	225	330	666	160	243	36	40	77	1171	62
PHF	0.83	0.809	0.938	0.859	0.9	0.909	0.81	0.818	0.769	0.837	0.929	0.738
Movement PHF	0.90			0.95			0.86			0.93		



Turn Count Summary

Accurate Video Counts Inc
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Location: Auto Park Way @ Valley Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: Auto Park Way @ Valley Parkway

	AM Period (7:00 AM - 9:00 AM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00 AM	79	181	23	1	97	4	1	118	49	56	77	35
7:15 AM	95	216	30	14	117	17	7	103	49	89	86	42
7:30 AM	140	210	37	8	144	19	9	144	73	99	99	39
7:45 AM	153	217	20	6	171	24	11	162	55	63	79	48
8:00 AM	158	188	22	5	135	21	9	126	57	76	90	39
8:15 AM	109	174	19	12	130	11	10	143	44	82	93	53
8:30 AM	145	173	34	11	146	24	9	120	47	76	86	36
8:45 AM	139	158	27	13	107	13	7	129	36	49	79	57
Total	1,018	1,517	212	70	1,047	133	63	1,045	410	590	689	349

AM Intersection Peak Hour : 7:30 AM - 8:30 AM Intersection PHF : 0.94

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	560	789	98	31	580	75	39	575	229	320	361	179	3,836
PHF	0.89	0.91	0.66	0.65	0.85	0.78	0.89	0.89	0.78	0.81	0.91	0.84	0.94
Movement PHF		0.93			0.85			0.92			0.91		0.94

	PM Period (4:00 PM - 6:00 PM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00 PM	45	154	39	51	69	22	11	229	63	44	199	95
4:15 PM	61	138	50	55	59	30	16	252	70	42	159	90
4:30 PM	64	156	44	46	67	27	13	219	79	50	167	91
4:45 PM	51	143	42	34	90	27	10	234	50	57	176	99
5:00 PM	54	114	58	44	86	31	12	182	67	52	203	114
5:15 PM	66	174	45	44	80	32	16	219	50	56	168	112
5:30 PM	49	135	56	38	71	25	20	179	48	49	137	84
5:45 PM	26	168	54	38	62	18	18	205	55	49	128	77
Total	416	1182	388	350	584	212	116	1,719	482	399	1,337	762

PM Intersection Peak Hour : 4:30 PM - 5:30 PM Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	235	587	189	168	323	117	51	854	246	215	714	416	4115
PHF	0.89	0.843	0.815	0.913	0.897	0.914	0.797	0.912	0.778	0.943	0.879	0.912	0.97
Movement PHF		0.89			0.94			0.93			0.91		0.97



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: W. 9th Avenue @ Valley Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: W. 9th Avenue @ Valley Parkway

	AM Period (7:00 AM - 9:00 AM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00 AM	28	212	8	38	47	13	20	87	0	3	45	38
7:15 AM	56	293	22	40	59	23	16	113	0	2	38	29
7:30 AM	64	268	44	61	51	14	25	118	4	1	53	29
7:45 AM	72	227	14	30	76	31	27	166	1	6	45	36
8:00 AM	48	239	13	15	70	23	20	131	2	3	37	41
8:15 AM	46	231	11	14	51	21	22	148	0	2	38	37
8:30 AM	45	214	19	11	42	24	22	134	5	1	20	33
8:45 AM	42	174	13	12	35	17	14	122	5	1	32	38
Total	401	1,858	144	221	431	166	166	1,019	17	19	308	281

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.95

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	240	1,027	93	146	256	91	88	528	7	12	173	135	2,796
PHF	0.83	0.88	0.53	0.60	0.84	0.73	0.81	0.80	0.44	0.50	0.82	0.82	0.95
Movement PHF	0.90			0.90			0.80			0.92			0.95

	PM Period (4:00 PM - 6:00 PM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00 PM	23	188	19	15	35	31	33	219	5	4	99	63
4:15 PM	38	160	24	14	39	28	36	244	4	4	104	74
4:30 PM	40	171	24	18	47	19	45	236	10	4	108	58
4:45 PM	37	158	26	18	56	26	49	204	4	3	103	67
5:00 PM	35	161	33	23	45	27	36	205	5	4	125	66
5:15 PM	37	171	39	17	31	30	41	198	7	1	98	64
5:30 PM	42	149	37	15	59	15	42	175	9	4	98	59
5:45 PM	36	174	31	12	53	23	41	172	8	2	73	64
Total	288	1,332	233	132	365	199	323	1,653	52	26	808	515

PM Intersection Peak Hour : 4:15 PM - 5:15 PM

Intersection PHF : 0.98

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	150	650	107	73	187	100	166	889	23	15	440	265	3065
PHF	0.94	0.95	0.811	0.793	0.835	0.893	0.847	0.911	0.575	0.938	0.88	0.895	0.98
Movement PHF	0.96			0.90			0.93			0.92			0.98



Turn Count Summary

Accurate Video Counts Inc
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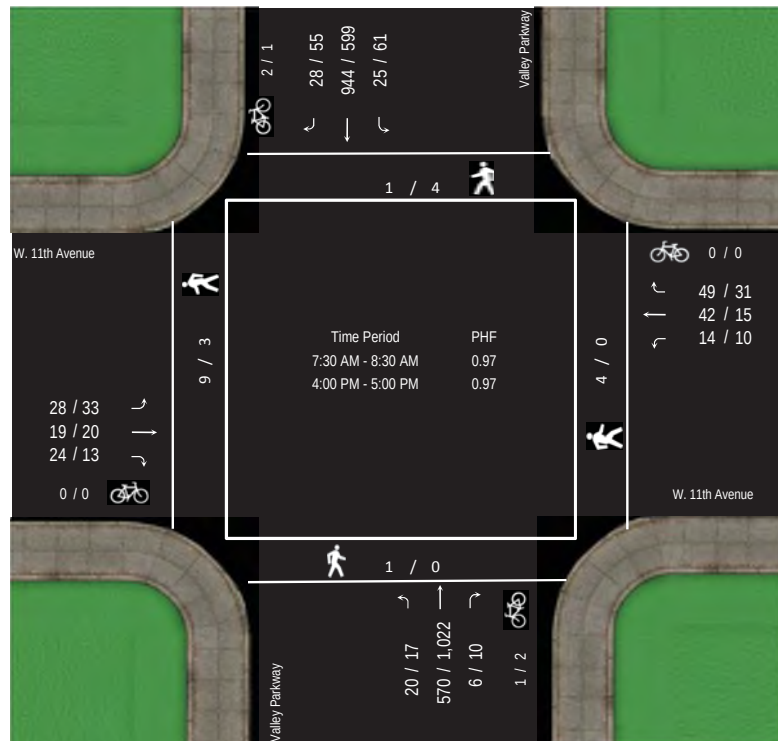
Location: W. 11th Avenue @ Valley Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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(619) 987-5136



Location: W. 11th Avenue @ Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	7	234	2	9	5	4	0	92	0	3	6	10	372
7:15 AM	10	271	4	10	6	0	2	104	4	8	5	4	428
7:30 AM	7	254	2	22	15	3	1	131	7	5	3	5	455
7:45 AM	7	223	10	9	11	3	2	153	1	8	5	8	440
8:00 AM	3	237	2	13	8	3	2	126	4	6	7	5	416
8:15 AM	11	230	11	5	8	5	1	160	8	5	4	10	458
8:30 AM	10	207	13	13	4	1	0	136	5	5	3	6	403
8:45 AM	12	155	10	14	3	2	3	132	6	2	7	11	357
Total	67	1,811	54	95	60	21	11	1,034	35	42	40	59	3,329

AM Intersection Peak Hour : 7:30 AM - 8:30 AM

Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	28	944	25	49	42	14	6	570	20	24	19	28	1,769
PHF	0.64	0.93	0.57	0.56	0.70	0.70	0.75	0.89	0.63	0.75	0.68	0.70	0.97
Movement PHF	0.95			0.66			0.88			0.85			0.97

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	10	160	24	6	3	2	1	262	2	2	5	6	483
4:15 PM	13	147	15	10	4	3	1	275	3	4	4	6	485
4:30 PM	15	148	11	9	7	5	4	254	3	3	3	13	475
4:45 PM	17	144	11	6	1	0	4	231	9	4	8	8	443
5:00 PM	10	149	20	4	1	0	3	235	1	1	14	9	447
5:15 PM	11	142	27	11	2	1	3	208	6	4	11	12	438
5:30 PM	12	133	24	5	4	0	1	245	2	1	9	7	443
5:45 PM	13	142	28	9	3	3	1	191	4	4	8	8	414
Total	101	1165	160	60	25	14	18	1,901	30	23	62	69	3,628

PM Intersection Peak Hour : 4:00 PM - 5:00 PM

Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	55	599	61	31	15	10	10	1022	17	13	20	33	1886
PHF	0.81	0.936	0.635	0.775	0.536	0.5	0.625	0.929	0.472	0.813	0.625	0.635	0.97
Movement PHF	0.92			0.67			0.94			0.83			0.97



Turn Count Summary

Accurate Video Counts Inc
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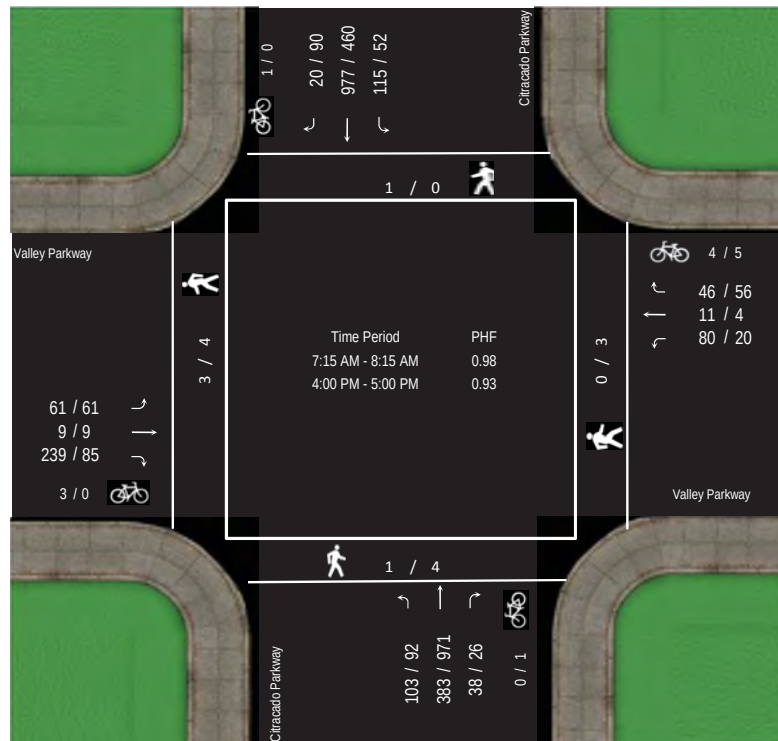
Location: Valley Parkway @ Citracado Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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Location: Valley Parkway @ Citracado Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	6	254	7	7	1	11	2	69	16	59	1	13	446
7:15 AM	3	303	9	13	2	14	8	80	16	66	1	15	530
7:30 AM	5	238	25	12	3	25	11	99	28	70	3	14	533
7:45 AM	8	223	34	10	2	23	8	117	22	57	2	18	524
8:00 AM	4	213	47	11	4	18	11	87	37	46	3	14	495
8:15 AM	5	208	48	9	6	16	21	109	20	24	8	13	487
8:30 AM	10	220	21	10	3	10	4	89	14	13	2	15	411
8:45 AM	9	151	7	8	3	5	3	109	11	12	1	16	335
Total	50	1,810	198	80	24	122	68	759	164	347	21	118	3,761

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.98

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	20	977	115	46	11	80	38	383	103	239	9	61	2,082
PHF	0.63	0.81	0.61	0.88	0.69	0.80	0.86	0.82	0.70	0.85	0.75	0.85	0.98
Movement PHF		0.88			0.86			0.89			0.89		0.98

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	23	118	9	13	0	5	4	261	20	13	3	13	482
4:15 PM	23	122	17	19	2	2	4	253	27	26	1	20	516
4:30 PM	16	117	15	13	1	6	7	232	25	24	2	15	473
4:45 PM	28	103	11	11	1	7	11	225	20	22	3	13	455
5:00 PM	16	116	11	11	0	8	3	217	27	22	2	13	446
5:15 PM	18	122	19	5	1	6	7	210	30	26	1	8	453
5:30 PM	29	99	10	6	1	1	9	238	19	23	3	19	457
5:45 PM	24	122	13	13	1	2	7	176	34	17	2	17	428
Total	177	919	105	91	7	37	52	1,812	202	173	17	118	3,710

PM Intersection Peak Hour : 4:00 PM - 5:00 PM

Intersection PHF : 0.93

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	90	460	52	56	4	20	26	971	92	85	9	61	1926
PHF	0.80	0.943	0.765	0.737	0.5	0.714	0.591	0.93	0.852	0.817	0.75	0.763	0.93
Movement PHF		0.93			0.87			0.96			0.82		0.93



Turn Count Summary

Accurate Video Counts Inc
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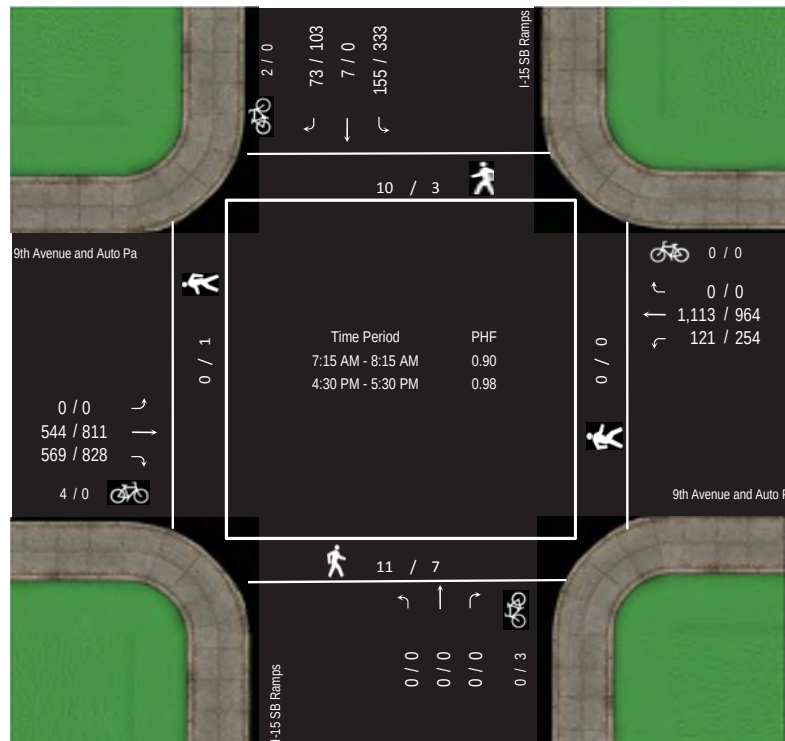
Location: 9th Avenue and Auto Parkway @ I-15 SB Ramps

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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(619) 987-5136



Location: 9th Avenue and Auto Parkway @ I-15 SB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	27	1	41	0	227	40	0	0	0	127	96	0	559
7:15 AM	13	3	33	0	278	27	0	0	0	141	137	0	632
7:30 AM	19	2	38	0	323	27	0	0	0	136	174	0	719
7:45 AM	17	0	50	0	276	23	0	0	0	152	125	0	643
8:00 AM	24	2	34	0	236	44	0	0	0	140	108	0	588
8:15 AM	20	2	39	0	246	20	0	0	0	121	122	0	570
8:30 AM	26	1	32	0	227	39	0	0	0	122	94	0	541
8:45 AM	26	0	60	0	157	20	0	0	0	128	108	0	499
Total	172	11	327	0	1,970	240	0	0	0	1,067	964	0	4,751

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.90

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	73	7	155	0	1,113	121	0	0	0	569	544	0	2,582
PHF	0.76	0.58	0.78	#####	0.86	0.69	#####	#####	#####	0.94	0.78	#####	0.90
Movement PHF		0.88			0.88		#DIV/0!				0.90		0.90

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	27	1	81	0	206	46	0	0	0	216	200	0	777
4:15 PM	35	0	80	0	230	47	0	0	0	190	213	0	795
4:30 PM	23	0	74	0	239	59	0	0	0	215	206	0	816
4:45 PM	31	0	94	0	236	48	0	0	0	195	204	0	808
5:00 PM	25	0	85	0	219	77	0	0	0	212	211	0	829
5:15 PM	24	0	80	0	270	70	0	0	0	206	190	0	840
5:30 PM	35	0	60	0	234	42	0	0	0	167	187	0	725
5:45 PM	36	0	78	0	227	44	0	0	0	170	170	0	725
Total	236	1	632	0	1,861	433	0	0	0	1,571	1,581	0	6,315

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.98

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	103	0	333	0	964	254	0	0	0	828	811	0	3293
PHF	0.83	#####	0.886	#####	0.893	0.825	#####	#####	#####	0.963	0.961	#####	0.98
Movement PHF		0.87			0.90		#DIV/0!				0.97		0.98



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



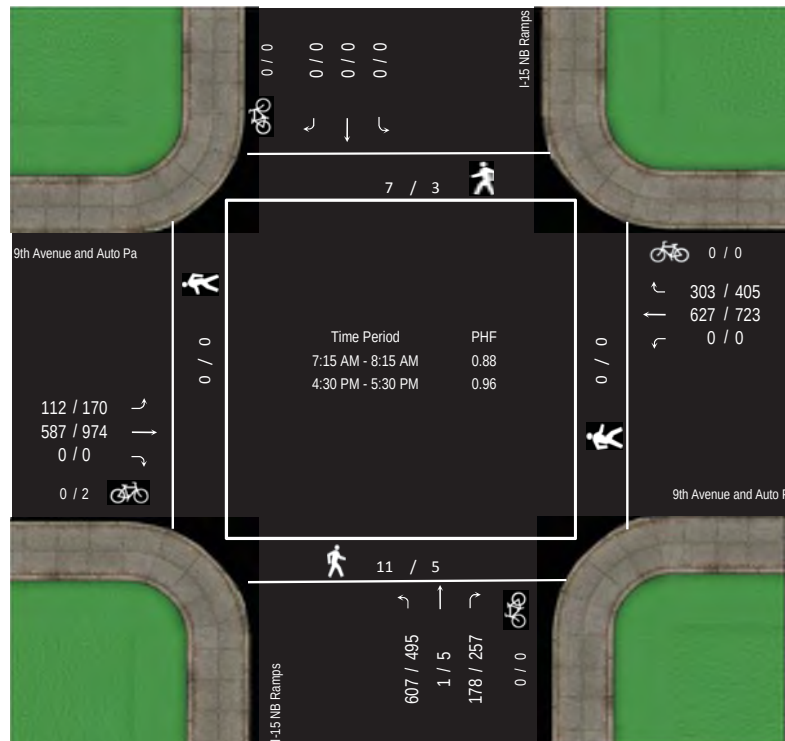
Location: 9th Avenue and Auto Parkway @ I-15 NB Ramps

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
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(619) 987-5136



Location: 9th Avenue and Auto Parkway @ I-15 NB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	83	158	0	16	0	109	0	108	29	503
7:15 AM	0	0	0	86	169	0	32	0	136	0	136	34	593
7:30 AM	0	0	0	79	178	0	43	0	172	0	184	28	684
7:45 AM	0	0	0	74	117	0	60	1	182	0	149	26	609
8:00 AM	0	0	0	64	163	0	43	0	117	0	118	24	529
8:15 AM	0	0	0	69	123	0	49	0	143	0	138	23	545
8:30 AM	0	0	0	58	175	0	63	0	91	0	103	23	513
8:45 AM	0	0	0	59	65	0	47	2	112	0	144	24	453
Total	0	0	0	572	1,148	0	353	3	1,062	0	1,080	211	4,429

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.88

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	303	627	0	178	1	607	0	587	112	2,415
PHF	#####	#####	#####	0.88	0.88	#####	0.74	0.25	0.83	#####	0.80	0.82	0.88
Movement PHF	#DIV/0!			0.90			0.81			0.82			0.88

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	74	130	0	65	5	122	0	228	53	677
4:15 PM	0	0	0	81	135	0	70	5	142	0	243	50	721
4:30 PM	0	0	0	104	168	0	54	1	130	0	229	51	737
4:45 PM	0	0	0	89	164	0	54	2	120	0	263	35	727
5:00 PM	0	0	0	108	176	0	74	1	120	0	251	45	775
5:15 PM	0	0	0	104	215	0	75	1	125	0	231	39	790
5:30 PM	0	0	0	88	140	0	61	0	136	0	219	28	672
5:45 PM	0	0	0	75	149	0	38	0	122	0	214	34	632
Total	0	0	0	723	1,277	0	491	10	1,017	0	1,878	335	5,731

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.96

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	405	723	0	257	5	495	0	974	170	3029
PHF	#####	#####	#####	0.938	0.841	#####	0.857	0.625	0.952	#####	0.926	0.833	0.96
Movement PHF	#DIV/0!			0.88			0.94			0.96			0.96



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: Kauana Loa Drive @ Country Club Drive

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: Kauana Loa Drive @ Country Club Drive

	AM Period (7:00 AM - 9:00 AM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:00 AM	0	7	10	8	0	3	4	6	0	0	0	0
7:15 AM	0	6	18	10	0	4	7	2	0	0	0	0
7:30 AM	0	11	13	20	0	0	3	4	0	0	0	0
7:45 AM	0	13	20	18	0	1	1	7	0	0	0	0
8:00 AM	0	3	9	11	0	3	2	1	0	0	0	0
8:15 AM	0	6	18	14	1	0	2	3	0	0	0	0
8:30 AM	0	7	8	5	0	2	1	3	0	0	0	0
8:45 AM	0	9	13	16	0	0	3	4	0	0	0	0
Total	0	62	109	102	1	13	23	30	0	0	0	0

AM Intersection Peak Hour : 7:00 AM - 8:00 AM

Intersection PHF : 0.82

	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Volume	0	37	61	56	0	8	15	19	0	0	0	0
PHF	#####	0.71	0.76	0.70	#####	0.50	0.54	0.68	#####	#####	#####	#####
Movement PHF		0.74			0.80			0.85		#DIV/0!		

	PM Period (4:00 PM - 6:00 PM)											
	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
4:00 PM	0	11	5	19	0	3	2	13	0	0	0	0
4:15 PM	0	6	14	19	0	3	5	4	0	0	0	0
4:30 PM	0	11	12	19	0	2	0	11	0	0	0	0
4:45 PM	0	6	11	23	0	2	3	11	0	0	0	0
5:00 PM	0	4	21	21	0	3	2	5	0	0	0	0
5:15 PM	0	5	21	19	0	1	1	12	0	0	0	0
5:30 PM	0	6	9	19	0	4	2	6	0	0	0	0
5:45 PM	0	7	8	15	0	6	1	9	0	0	0	0
Total	0	56	101	154	0	24	16	71	0	0	0	0

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.96

	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Volume	0	26	65	82	0	8	6	39	0	0	0	0
PHF	#####	0.591	0.774	0.891	#####	0.667	0.5	0.813	#####	#####	#####	#####
Movement PHF		0.88			0.90			0.80		#DIV/0!		



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Country Club Drive @ Harmony Grove Village Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Country Club Drive @ Harmony Grove Village Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	1	2	0	0	0	0	0	0	0	0	3
7:30 AM	2	0	7	4	0	0	0	0	0	0	5	0	18
7:45 AM	1	0	7	5	1	0	0	0	0	0	0	0	14
8:00 AM	0	0	5	0	2	0	0	0	0	0	1	1	9
8:15 AM	1	0	4	5	4	0	0	0	0	0	1	0	15
8:30 AM	0	0	8	7	4	0	0	0	0	0	9	0	28
8:45 AM	0	0	1	2	1	0	0	0	0	0	3	1	8
Total	4	0	33	26	12	0	0	0	0	0	19	2	96

AM Intersection Peak Hour : 7:45 AM - 8:45 AM

Intersection PHF : 0.59

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	2	0	24	17	11	0	0	0	0	0	11	1	66
PHF	0.50	#####	0.75	0.61	0.69	#####	#####	#####	#####	#####	0.31	0.25	0.59
Movement PHF		0.81			0.64		#DIV/0!				0.33		0.59

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	3	8	1	0	0	0	0	0	1	0	13
4:15 PM	0	0	10	6	0	0	0	0	0	0	1	0	17
4:30 PM	0	0	7	4	0	0	0	0	0	0	0	0	11
4:45 PM	0	0	8	8	0	0	0	0	0	0	2	0	18
5:00 PM	0	0	1	3	1	0	0	0	0	0	2	0	7
5:15 PM	0	0	5	9	1	0	0	0	0	0	2	1	18
5:30 PM	0	0	4	4	0	0	0	0	0	0	2	1	11
5:45 PM	0	0	5	5	0	0	0	0	0	0	1	0	11
Total	0	0	43	47	3	0	0	0	0	0	11	2	106

PM Intersection Peak Hour : 4:00 PM - 5:00 PM

Intersection PHF : 0.82

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	28	26	1	0	0	0	0	0	4	0	59
PHF	#####	#####	0.7	0.813	0.25	#####	#####	#####	#####	#####	0.5	#####	0.82
Movement PHF			0.70		0.75		#DIV/0!				0.50		0.82



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Harmony Grove Road @ Country Club Drive

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Harmony Grove Road @ Country Club Drive

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	0	63	3	8	0	2	0	27	0	103
7:15 AM	0	0	0	0	60	0	2	0	0	0	34	0	96
7:30 AM	0	0	0	0	65	1	0	0	1	0	43	0	110
7:45 AM	0	0	0	0	58	0	5	0	0	2	44	0	109
8:00 AM	0	0	0	0	68	1	1	0	0	0	30	0	100
8:15 AM	0	0	0	0	58	0	2	0	0	1	41	0	102
8:30 AM	0	0	0	0	52	6	5	0	1	0	24	0	88
8:45 AM	0	0	0	0	54	1	0	0	0	1	25	0	81
Total	0	0	0	0	478	12	23	0	4	4	268	0	789

AM Intersection Peak Hour : 7:30 AM - 8:30 AM

Intersection PHF : 0.96

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	249	2	8	0	1	3	158	0	421
PHF	####	####	####	####	0.92	0.50	0.40	####	0.25	0.38	0.90	####	0.96
Movement PHF	#DIV/0!			0.91			0.45			0.88			0.96

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	0	26	5	1	0	0	1	71	0	104
4:15 PM	0	0	0	0	30	4	2	0	1	1	84	0	122
4:30 PM	0	0	0	0	37	1	4	0	0	0	79	0	121
4:45 PM	0	0	0	0	49	4	3	0	0	1	97	0	154
5:00 PM	0	0	0	0	45	4	3	0	0	0	74	0	126
5:15 PM	0	0	0	0	45	1	0	0	0	0	80	0	126
5:30 PM	0	0	0	0	48	2	2	0	0	1	74	0	127
5:45 PM	0	0	0	0	39	5	5	0	0	1	55	0	105
Total	0	0	0	0	319	26	20	0	1	5	614	0	985

PM Intersection Peak Hour : 4:45 PM - 5:45 PM

Intersection PHF : 0.87

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	187	11	8	0	0	2	325	0	533
PHF	####	####	####	####	0.954	0.688	0.667	####	####	0.5	0.838	####	0.87
Movement PHF	#DIV/0!			0.93			0.67			0.83			0.87



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Kauana Loa Drive @ Harmony Grove Road

Date of Count: Tuesday, June 03, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-01213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Kauana Loa Drive @ Harmony Grove Road

AM Period (7:00 AM - 9:00 AM)							
		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
7:00 AM		19	58	42	0	2	20
7:15 AM		18	59	45	0	0	24
7:30 AM		12	63	37	1	2	16
7:45 AM		19	50	41	1	1	15
8:00 AM		8	51	26	0	2	14
8:15 AM		16	47	22	1	3	20
8:30 AM		12	48	25	1	2	18
8:45 AM		9	49	21	0	1	17
Total		113	425	259	4	13	144

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.93**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		68	230	165	2	5	75	545
PHF		0.89	0.91	0.92	0.50	0.63	0.78	0.93
Movement PHF		0.97		0.93		0.83		0.93

PM Period (4:00 PM - 6:00 PM)							
		Westbound		Northbound		Eastbound	
		Thru	Left	Right	Left	Right	Thru
4:00 PM		27	28	57	1	1	14
4:15 PM		23	32	78	4	0	18
4:30 PM		25	35	82	2	1	14
4:45 PM		40	48	92	1	1	20
5:00 PM		31	49	81	3	1	18
5:15 PM		29	43	74	2	2	25
5:30 PM		24	46	69	2	1	14
5:45 PM		24	40	69	3	2	11
Total		223	321	602	18	9	134

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.89**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		125	175	329	8	5	77	719
PHF		0.781	0.893	0.894	0.667	0.625	0.77	0.89
Movement PHF		0.85		0.91		0.76		0.89



Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: Harmony Grove Road @ Harmony Grove Village Parkway

Date of Count: Wednesday, June 04, 2014

Analysts: LV/CD

Weather: Sunny

AVC Proj No: 14-0213



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocontrols.com
(619) 987-5136



Location: Harmony Grove Road @ Harmony Grove Village Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	69	0	0	0	0	0	23	0	2	0	0	94
7:15 AM	0	57	0	0	0	0	0	35	1	4	0	0	97
7:30 AM	0	69	0	0	0	0	0	40	2	8	0	2	121
7:45 AM	0	55	0	0	0	0	0	39	5	5	0	1	105
8:00 AM	1	62	0	0	0	0	0	35	2	2	0	2	104
8:15 AM	2	50	0	0	0	0	0	36	4	3	0	1	96
8:30 AM	2	51	0	0	0	0	0	28	3	11	0	1	96
8:45 AM	0	51	0	0	0	0	0	22	2	11	0	2	88
Total	5	464	0	0	0	0	0	258	19	46	0	9	801

AM Intersection Peak Hour : 7:15 AM - 8:15 AM

Intersection PHF : 0.88

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	1	243	0	0	0	0	0	149	10	19	0	5	427
PHF	0.25	0.88	####	####	####	####	####	0.93	0.50	0.59	####	0.63	0.88
Movement PHF		0.88		#DIV/0!			0.90			0.60			0.88

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	28	0	0	0	0	0	65	11	3	0	1	108
4:15 PM	1	24	0	0	0	0	0	88	5	6	0	2	126
4:30 PM	1	43	0	0	0	0	0	75	3	4	0	3	129
4:45 PM	1	44	0	0	0	0	0	94	7	6	0	3	155
5:00 PM	0	46	0	0	0	0	0	73	4	1	0	1	125
5:15 PM	2	41	0	0	0	0	0	72	7	5	0	1	128
5:30 PM	1	46	0	0	0	0	0	66	5	4	0	2	124
5:45 PM	1	37	0	0	0	0	0	61	4	4	0	3	110
Total	7	309	0	0	0	0	0	594	46	33	0	16	1,005

PM Intersection Peak Hour : 4:30 PM - 5:30 PM

Intersection PHF : 0.87

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	4	174	0	0	0	0	0	314	21	16	0	8	537
PHF	0.50	0.946	####	####	####	####	####	0.835	0.75	0.667	####	0.667	0.87
Movement PHF		0.97		#DIV/0!			0.83			0.67			0.87



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Auto Park Way, btwn Mission Rd and Country Club Dr

Orientation: North-South

Date of Count: Tuesday, June 03, 2014

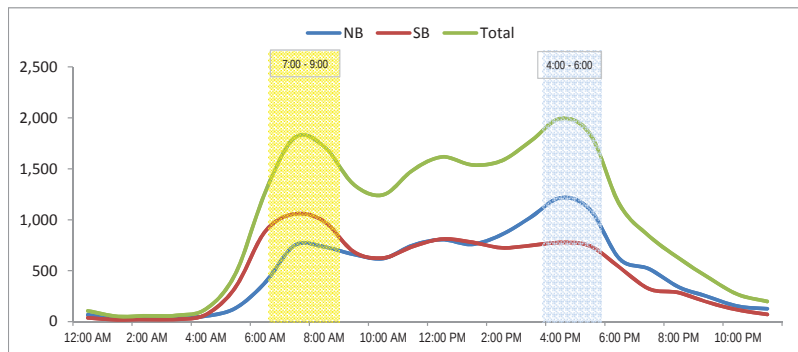
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0213

24 Hour Segment Volume				23,602			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	68	38	106	12:00 PM - 1:00 PM	806	811	1,617
1:00 AM - 2:00 AM	34	19	53	1:00 PM - 2:00 PM	759	780	1,539
2:00 AM - 3:00 AM	36	22	58	2:00 PM - 3:00 PM	853	725	1,578
3:00 AM - 4:00 AM	39	23	62	3:00 PM - 4:00 PM	1,026	748	1,774
4:00 AM - 5:00 AM	55	70	125	4:00 PM - 5:00 PM	1,216	777	1,993
5:00 AM - 6:00 AM	133	337	470	5:00 PM - 6:00 PM	1,100	743	1,843
6:00 AM - 7:00 AM	382	884	1,266	6:00 PM - 7:00 PM	617	533	1,150
7:00 AM - 8:00 AM	748	1,057	1,805	7:00 PM - 8:00 PM	518	322	840
8:00 AM - 9:00 AM	735	984	1,719	8:00 PM - 9:00 PM	340	285	625
9:00 AM - 10:00 AM	660	687	1,347	9:00 PM - 10:00 PM	245	189	434
10:00 AM - 11:00 AM	620	625	1,245	10:00 PM - 11:00 PM	152	116	268
11:00 AM - 12:00 PM	750	737	1,487	11:00 PM - 12:00 PM	127	71	198
Total	4,260	5,483	9,743	Total	7,759	6,100	13,859

24-Hour NB Volume 12,019 24-Hour SB Volume 11,583



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Citricado Pkwy, btwn Avenida Del Diablo and Valley Pkwy

Orientation: East-West

Date of Count: Tuesday, June 03, 2014

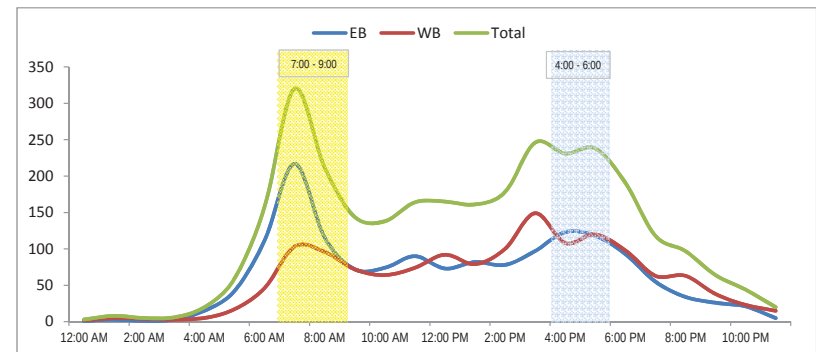
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0213

24 Hour Segment Volume				2,989			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	1	2	3	12:00 PM - 1:00 PM	73	92	165
1:00 AM - 2:00 AM	3	5	8	1:00 PM - 2:00 PM	82	79	161
2:00 AM - 3:00 AM	1	4	5	2:00 PM - 3:00 PM	78	100	178
3:00 AM - 4:00 AM	3	3	6	3:00 PM - 4:00 PM	97	149	246
4:00 AM - 5:00 AM	15	5	20	4:00 PM - 5:00 PM	123	108	231
5:00 AM - 6:00 AM	42	17	59	5:00 PM - 6:00 PM	118	120	238
6:00 AM - 7:00 AM	111	46	157	6:00 PM - 7:00 PM	93	98	191
7:00 AM - 8:00 AM	217	103	320	7:00 PM - 8:00 PM	55	63	118
8:00 AM - 9:00 AM	116	96	212	8:00 PM - 9:00 PM	34	63	97
9:00 AM - 10:00 AM	72	72	144	9:00 PM - 10:00 PM	26	38	64
10:00 AM - 11:00 AM	74	64	138	10:00 PM - 11:00 PM	21	23	44
11:00 AM - 12:00 PM	90	74	164	11:00 PM - 12:00 PM	5	15	20
Total	745	491	1,236	Total	805	948	1,753

24-Hour EB Volume 1,550 24-Hour WB Volume 1,439





24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Valley Pkwy, btwn W. 11th Ave and Avenida Del Diablo

Orientation: North-South

Date of Count: Tuesday, June 03, 2014

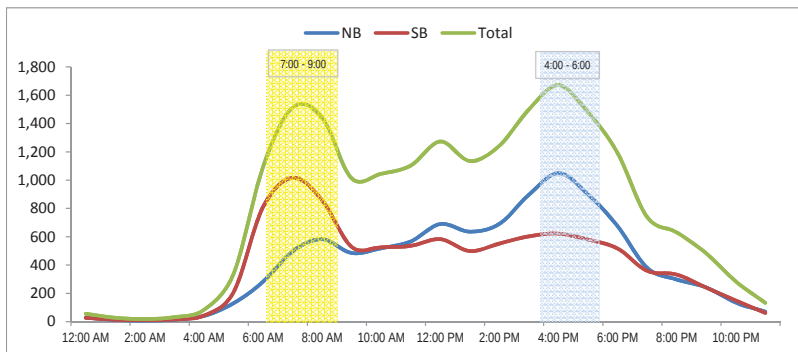
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0213

24 Hour Segment Volume				19,530			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	29	27	56	12:00 PM - 1:00 PM	690	583	1,273
1:00 AM - 2:00 AM	13	15	28	1:00 PM - 2:00 PM	636	499	1,135
2:00 AM - 3:00 AM	8	11	19	2:00 PM - 3:00 PM	691	552	1,243
3:00 AM - 4:00 AM	15	17	32	3:00 PM - 4:00 PM	897	603	1,500
4:00 AM - 5:00 AM	41	43	84	4:00 PM - 5:00 PM	1,049	622	1,671
5:00 AM - 6:00 AM	130	207	337	5:00 PM - 6:00 PM	900	580	1,480
6:00 AM - 7:00 AM	282	811	1,093	6:00 PM - 7:00 PM	675	517	1,192
7:00 AM - 8:00 AM	497	1,016	1,513	7:00 PM - 8:00 PM	381	359	740
8:00 AM - 9:00 AM	583	858	1,441	8:00 PM - 9:00 PM	298	333	631
9:00 AM - 10:00 AM	485	528	1,013	9:00 PM - 10:00 PM	242	241	483
10:00 AM - 11:00 AM	519	526	1,045	10:00 PM - 11:00 PM	135	150	285
11:00 AM - 12:00 PM	567	536	1,103	11:00 PM - 12:00 AM	71	62	133
Total	3,169	4,595	7,764	Total	6,665	5,101	11,766

24-Hour	NB	Volume	9,834	24-Hour	SB	Volume	9,696



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: 1. S. Auto Park Way to I-15 SB Ramps

Orientation: East-West

Date of Count: Tuesday, August 19, 2014

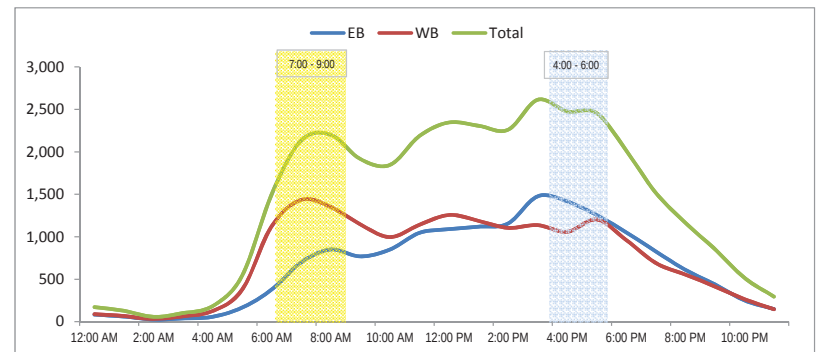
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0244

24 Hour Segment Volume				33,790			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	83	89	172	12:00 PM - 1:00 PM	1,089	1,257	2,346
1:00 AM - 2:00 AM	61	67	128	1:00 PM - 2:00 PM	1,119	1,188	2,307
2:00 AM - 3:00 AM	25	33	58	2:00 PM - 3:00 PM	1,156	1,104	2,260
3:00 AM - 4:00 AM	38	64	102	3:00 PM - 4:00 PM	1,476	1,137	2,613
4:00 AM - 5:00 AM	58	126	184	4:00 PM - 5:00 PM	1,418	1,058	2,476
5:00 AM - 6:00 AM	166	376	542	5:00 PM - 6:00 PM	1,253	1,203	2,456
6:00 AM - 7:00 AM	377	1,124	1,501	6:00 PM - 7:00 PM	1,054	962	2,016
7:00 AM - 8:00 AM	699	1,435	2,134	7:00 PM - 8:00 PM	827	691	1,518
8:00 AM - 9:00 AM	850	1,350	2,200	8:00 PM - 9:00 PM	611	554	1,165
9:00 AM - 10:00 AM	769	1,146	1,915	9:00 PM - 10:00 PM	439	415	854
10:00 AM - 11:00 AM	849	996	1,845	10:00 PM - 11:00 PM	251	266	517
11:00 AM - 12:00 PM	1,046	1,140	2,186	11:00 PM - 12:00 AM	149	146	295
Total	5,021	7,946	12,967	Total	10,842	9,981	20,823

24-Hour	EB	Volume	15,863	24-Hour	WB	Volume	17,927





24 Hour Segment Count

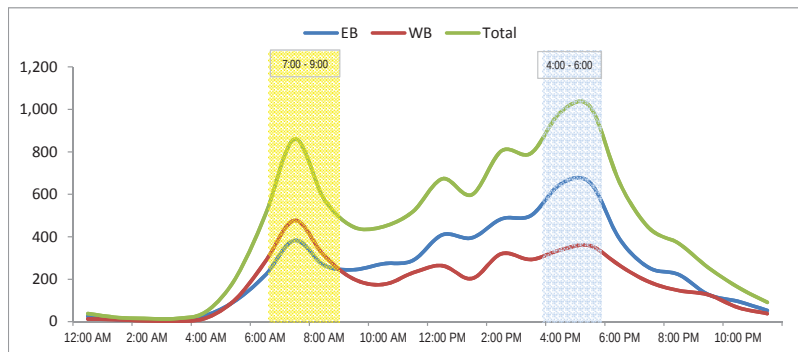
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: W. 9th Ave, btwn Valley Pkwy and Auto Park Way
Orientation: East-West
Date of Count: Tuesday, June 03, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0213

24 Hour Segment Volume				10,528			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	25	13	38	12:00 PM - 1:00 PM	409	264	673
1:00 AM - 2:00 AM	10	10	20	1:00 PM - 2:00 PM	395	203	598
2:00 AM - 3:00 AM	11	4	15	2:00 PM - 3:00 PM	484	320	804
3:00 AM - 4:00 AM	12	3	15	3:00 PM - 4:00 PM	500	293	793
4:00 AM - 5:00 AM	30	17	47	4:00 PM - 5:00 PM	648	338	986
5:00 AM - 6:00 AM	99	105	204	5:00 PM - 6:00 PM	655	358	1,013
6:00 AM - 7:00 AM	218	281	499	6:00 PM - 7:00 PM	390	265	655
7:00 AM - 8:00 AM	383	477	860	7:00 PM - 8:00 PM	254	187	441
8:00 AM - 9:00 AM	266	311	577	8:00 PM - 9:00 PM	222	147	369
9:00 AM - 10:00 AM	245	201	446	9:00 PM - 10:00 PM	128	127	255
10:00 AM - 11:00 AM	273	175	448	10:00 PM - 11:00 PM	96	67	163
11:00 AM - 12:00 PM	288	230	518	11:00 PM - 12:00 AM	53	38	91
Total	1,860	1,827	3,687	Total	4,234	2,607	6,841

24-Hour EB Volume 6,094 24-Hour WB Volume 4,434



Vehicular Turn Count

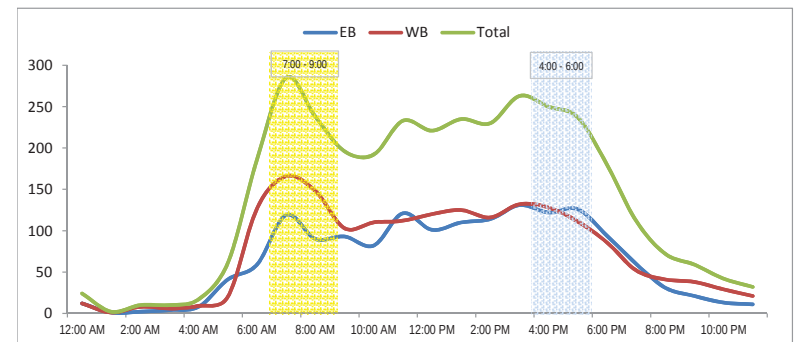
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-1536



Location: Country Club Drive between Country Club Way and Auto Park Way
Orientation: east-west
Date of Count: Tuesday, August 28, 2012
Analysts: DASH
Weather: Sunny
AVC Proj. No: 12-0003

24 Hour Segment Volume				3,387			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	12	12	24	12:00 PM - 1:00 PM	101	120	221
1:00 AM - 2:00 AM	1	1	2	1:00 PM - 2:00 PM	110	125	235
2:00 AM - 3:00 AM	2	8	10	2:00 PM - 3:00 PM	114	116	230
3:00 AM - 4:00 AM	4	6	10	3:00 PM - 4:00 PM	131	132	263
4:00 AM - 5:00 AM	8	9	17	4:00 PM - 5:00 PM	122	128	250
5:00 AM - 6:00 AM	41	20	61	5:00 PM - 6:00 PM	126	111	237
6:00 AM - 7:00 AM	59	127	186	6:00 PM - 7:00 PM	94	86	180
7:00 AM - 8:00 AM	119	166	285	7:00 PM - 8:00 PM	60	52	112
8:00 AM - 9:00 AM	90	148	238	8:00 PM - 9:00 PM	31	41	72
9:00 AM - 10:00 AM	93	103	196	9:00 PM - 10:00 PM	21	38	59
10:00 AM - 11:00 AM	82	110	192	10:00 PM - 11:00 PM	13	29	42
11:00 AM - 12:00 PM	121	112	233	11:00 PM - 12:00 AM	11	21	32
Total	632	822	1,454	Total	934	999	1,933

24-Hour EB Volume 1,566 24-Hour WB Volume 1,821





24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Country Club Dr, btwn Auto Park Way and Kauana Loa Dr

Orientation: North-South

Date of Count: Tuesday, June 03, 2014

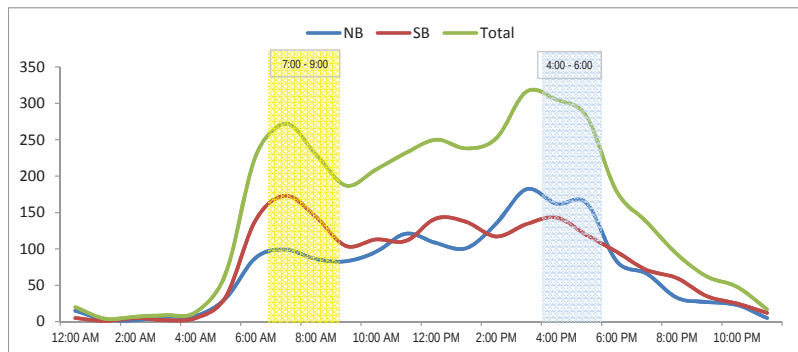
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0213

24 Hour Segment Volume				3,656			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	15	5	20	12:00 PM - 1:00 PM	108	142	250
1:00 AM - 2:00 AM	3	1	4	1:00 PM - 2:00 PM	101	137	238
2:00 AM - 3:00 AM	2	5	7	2:00 PM - 3:00 PM	135	117	252
3:00 AM - 4:00 AM	7	2	9	3:00 PM - 4:00 PM	182	134	316
4:00 AM - 5:00 AM	8	5	13	4:00 PM - 5:00 PM	162	143	305
5:00 AM - 6:00 AM	32	34	66	5:00 PM - 6:00 PM	163	119	282
6:00 AM - 7:00 AM	88	140	228	6:00 PM - 7:00 PM	83	96	179
7:00 AM - 8:00 AM	99	173	272	7:00 PM - 8:00 PM	66	71	137
8:00 AM - 9:00 AM	86	144	230	8:00 PM - 9:00 PM	33	60	93
9:00 AM - 10:00 AM	83	104	187	9:00 PM - 10:00 PM	27	35	62
10:00 AM - 11:00 AM	96	113	209	10:00 PM - 11:00 PM	23	25	48
11:00 AM - 12:00 PM	121	111	232	11:00 PM - 12:00 PM	5	12	17
Total	640	837	1,477	Total	1,088	1,091	2,179

24-Hour NB Volume 1,728 24-Hour SB Volume 1,928



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Country Club Dr, btwn Lauana Loa Dr and Harmony Grove Village Pkwy

Orientation: North-South

Date of Count: Tuesday, June 03, 2014

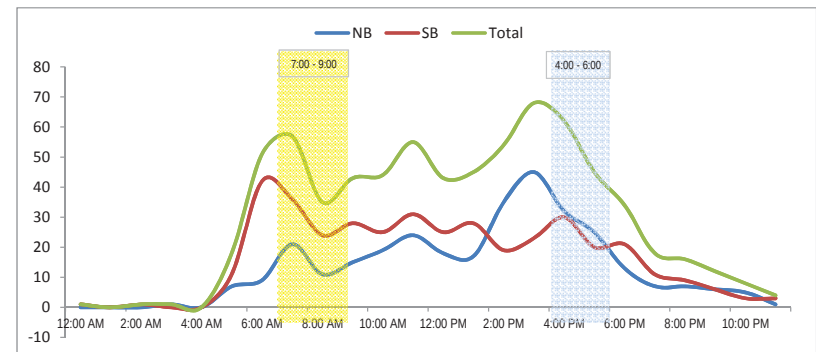
Analysts: DASH

Weather: Sunny

AVC Proj. No: 14-0213

24 Hour Segment Volume				715			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	0	1	1	12:00 PM - 1:00 PM	18	25	43
1:00 AM - 2:00 AM	0	0	0	1:00 PM - 2:00 PM	17	28	45
2:00 AM - 3:00 AM	0	1	1	2:00 PM - 3:00 PM	35	19	54
3:00 AM - 4:00 AM	1	0	1	3:00 PM - 4:00 PM	45	23	68
4:00 AM - 5:00 AM	0	0	0	4:00 PM - 5:00 PM	32	30	62
5:00 AM - 6:00 AM	7	11	18	5:00 PM - 6:00 PM	25	20	45
6:00 AM - 7:00 AM	9	42	51	6:00 PM - 7:00 PM	13	21	34
7:00 AM - 8:00 AM	21	36	57	7:00 PM - 8:00 PM	7	11	18
8:00 AM - 9:00 AM	11	24	35	8:00 PM - 9:00 PM	7	9	16
9:00 AM - 10:00 AM	15	28	43	9:00 PM - 10:00 PM	6	6	12
10:00 AM - 11:00 AM	19	25	44	10:00 PM - 11:00 PM	5	3	8
11:00 AM - 12:00 PM	24	31	55	11:00 PM - 12:00 PM	1	3	4
Total	107	199	306	Total	211	198	409

24-Hour NB Volume 318 24-Hour SB Volume 397





Vehicular Turn Count

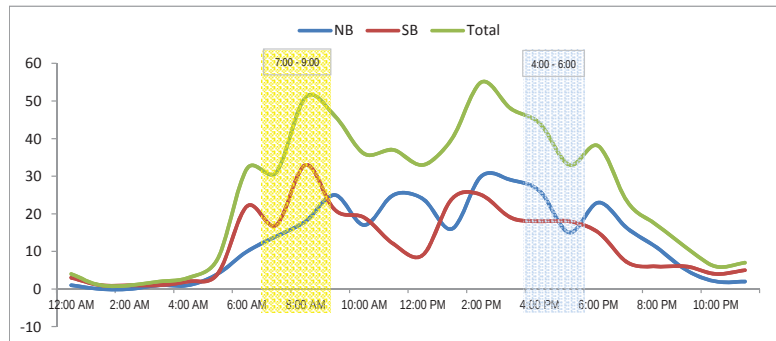
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-1536



Location: Country Club Drive between Kauana Loa Drive and Harmony Grove Road
Orientation: north-south
Date of Count: Tuesday, August 28, 2012
Analysts: DASH
Weather: Sunny
AVC Proj. No: 12-0003

24 Hour Segment Volume					607				
Time		Hourly Volume			Time		Hourly Volume		
		NB	SB	Total			NB	SB	Total
12:00 AM - 1:00 AM		1	3	4	12:00 PM - 1:00 PM		24	9	33
1:00 AM - 2:00 AM		0	1	1	1:00 PM - 2:00 PM		16	24	40
2:00 AM - 3:00 AM		0	1	1	2:00 PM - 3:00 PM		30	25	55
3:00 AM - 4:00 AM		1	1	2	3:00 PM - 4:00 PM		29	19	48
4:00 AM - 5:00 AM		1	2	3	4:00 PM - 5:00 PM		26	18	44
5:00 AM - 6:00 AM		4	4	8	5:00 PM - 6:00 PM		15	18	33
6:00 AM - 7:00 AM		10	22	32	6:00 PM - 7:00 PM		23	15	38
7:00 AM - 8:00 AM		14	17	31	7:00 PM - 8:00 PM		16	7	23
8:00 AM - 9:00 AM		18	33	51	8:00 PM - 9:00 PM		11	6	17
9:00 AM - 10:00 AM		25	21	46	9:00 PM - 10:00 PM		5	6	11
10:00 AM - 11:00 AM		17	19	36	10:00 PM - 11:00 PM		2	4	6
11:00 AM - 12:00 PM		25	12	37	11:00 PM - 12:00 AM		2	5	7
Total		116	136	252	Total		199	156	355

24-Hour	NB	Volume	315	24-Hour	SB	Volume	292



24 Hour Segment Count

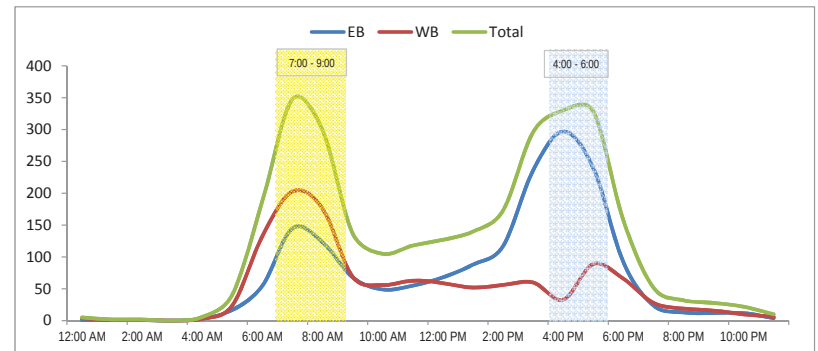
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Harmony Grove Rd, West of Country Club Dr
Orientation: East-West
Date of Count: Tuesday, February 04, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0158

24 Hour Segment Volume					2,948				
Time		Hourly Volume			Time		Hourly Volume		
		EB	WB	Total			EB	WB	Total
12:00 AM - 1:00 AM		1	4	5	12:00 PM - 1:00 PM		68	59	127
1:00 AM - 2:00 AM		1	1	2	1:00 PM - 2:00 PM		88	52	140
2:00 AM - 3:00 AM		1	1	2	2:00 PM - 3:00 PM		117	56	173
3:00 AM - 4:00 AM		0	0	0	3:00 PM - 4:00 PM		236	60	296
4:00 AM - 5:00 AM		3	3	6	4:00 PM - 5:00 PM		297	33	330
5:00 AM - 6:00 AM		17	24	41	5:00 PM - 6:00 PM		240	89	329
6:00 AM - 7:00 AM		55	133	188	6:00 PM - 7:00 PM		92	66	158
7:00 AM - 8:00 AM		145	203	348	7:00 PM - 8:00 PM		24	28	52
8:00 AM - 9:00 AM		123	176	299	8:00 PM - 9:00 PM		13	19	32
9:00 AM - 10:00 AM		68	69	137	9:00 PM - 10:00 PM		12	16	28
10:00 AM - 11:00 AM		49	56	105	10:00 PM - 11:00 PM		12	10	22
11:00 AM - 12:00 PM		55	63	118	11:00 PM - 12:00 AM		4	6	10
Total		518	733	1,251	Total		1,203	494	1,697

24-Hour	EB	Volume	1,721	24-Hour	WB	Volume	1,227





24 Hour Segment Count

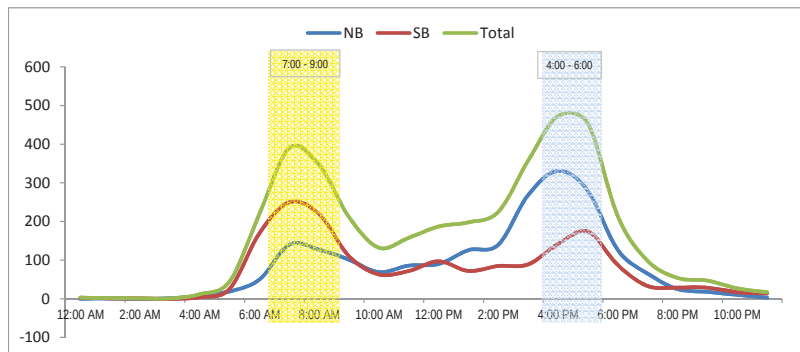
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Harmony Grove Rd, btwn Kauana Loa Dr to Harmony Grove Village Pkwy
Orientation: North-South
Date of Count: Tuesday, June 03, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0213

24 Hour Segment Volume				3,871			
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	0	3	3	12:00 PM - 1:00 PM	90	97	187
1:00 AM - 2:00 AM	1	1	2	1:00 PM - 2:00 PM	126	72	198
2:00 AM - 3:00 AM	0	1	1	2:00 PM - 3:00 PM	140	85	225
3:00 AM - 4:00 AM	1	0	1	3:00 PM - 4:00 PM	269	89	358
4:00 AM - 5:00 AM	8	4	12	4:00 PM - 5:00 PM	331	142	473
5:00 AM - 6:00 AM	19	26	45	5:00 PM - 6:00 PM	279	174	453
6:00 AM - 7:00 AM	50	170	220	6:00 PM - 7:00 PM	126	87	213
7:00 AM - 8:00 AM	140	250	390	7:00 PM - 8:00 PM	65	33	98
8:00 AM - 9:00 AM	127	219	346	8:00 PM - 9:00 PM	25	29	54
9:00 AM - 10:00 AM	101	110	211	9:00 PM - 10:00 PM	18	29	47
10:00 AM - 11:00 AM	69	63	132	10:00 PM - 11:00 PM	10	17	27
11:00 AM - 12:00 PM	86	72	158	11:00 PM - 12:00 PM	3	14	17
Total	602	919	1,521	Total	1,482	868	2,350

24-Hour NB Volume 2,084 24-Hour SB Volume 1,787



24 Hour Segment Count

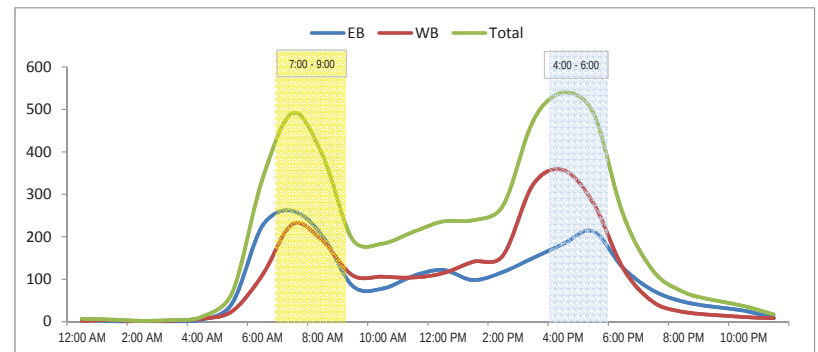
Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Harmony Grove Rd, East of Kauna Loa Dr
Orientation: East-West
Date of Count: Tuesday, February 04, 2014
Analysts: DASH
Weather: Sunny
AVC Proj. No: 14-0158

24 Hour Segment Volume				4,705			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	5	2	7	12:00 PM - 1:00 PM	122	114	236
1:00 AM - 2:00 AM	1	4	5	1:00 PM - 2:00 PM	98	141	239
2:00 AM - 3:00 AM	1	1	2	2:00 PM - 3:00 PM	117	156	273
3:00 AM - 4:00 AM	1	3	4	3:00 PM - 4:00 PM	150	323	473
4:00 AM - 5:00 AM	5	7	12	4:00 PM - 5:00 PM	183	357	540
5:00 AM - 6:00 AM	44	25	69	5:00 PM - 6:00 PM	213	280	493
6:00 AM - 7:00 AM	226	110	336	6:00 PM - 7:00 PM	126	125	251
7:00 AM - 8:00 AM	261	230	491	7:00 PM - 8:00 PM	73	46	119
8:00 AM - 9:00 AM	202	190	392	8:00 PM - 9:00 PM	47	23	70
9:00 AM - 10:00 AM	84	109	193	9:00 PM - 10:00 PM	35	16	51
10:00 AM - 11:00 AM	78	106	184	10:00 PM - 11:00 PM	26	11	37
11:00 AM - 12:00 PM	107	104	211	11:00 PM - 12:00 PM	9	8	17
Total	1,015	891	1,906	Total	1,199	1,600	2,799

24-Hour EB Volume 2,214 24-Hour WB Volume 2,491



PeMS CAPM					M15.596
					Abs 15.6

Lane Flow 1	Lane Flow 2	Lane Flow 3	Lane Flow 4	Lane Flow 5	Total
1483	1107	1554			4144
1475	1538	2084			5097

PeMS CAPM				M14.86
				Abs 14.9

Lane Flow 1	Lane Flow 2	Lane Flow 3	Lane Flow 4	Total
1932	1695	1367		4994
1890	1667	1426		4983

WESTBOUND

Segment #1:	PeMS CAPM	M15.369
Mainline East of Nordahl		Abs 15.4

Sample Time	Lane Flow 1	Lane Flow 2	Lane Flow 3	Lane Flow 4	Lane Flow 5	Total
10/11/2011 7:00	2225	1956	1482			5663
10/11/2011 16:00	1757	1842	1471			5070

Segment #2:	PeMS CAPM	M14.14
Mainline West of Nordahl		Abs 14.1

Sample Time	Lane Flow 1	Lane Flow 2	Lane Flow 3	Lane Flow 4	Lane Flow 5	Total
10/11/2011 8:00	2394	2112	1356			5862
10/11/2011 16:00	2140	2036	1449			5625

APPENDIX C

HIGHWAY CAPACITY MANUAL INTERSECTION METHODOLOGY

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2000 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the 2000 Highway Capacity Manual (HCM), Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following table, and are based on the average control delay for any particular minor movement.

LEVEL OF SERVICE	AVERAGE CONTROL DELAY SEC/VEH			EXPECTED DELAY TO MINOR STREET TRAFFIC
A	0.0	≤	10.0	Little or no delay
B	10.1	to	15.0	Short traffic delays
C	15.1	to	25.0	Average traffic delays
D	25.1	to	35.0	Long traffic delays
E	35.1	to	50.0	Very long traffic delays
F		>	50.0	Severe congestion

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This Level of Service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form on side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Notwithstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

2000 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

In the 2000 Highway Capacity Manual (HCM), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

LEVEL OF SERVICE	CONTROLLED DELAY PER VEHICLE (SEC)		
A		≤	10.0
B	10.1	to	20.0
C	20.1	to	35.0
D	35.1	to	55.0
E	55.1	to	80.0
F		>	80.0

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

APPENDIX D

COUNTY OF SAN DIEGO AND CITY OF ESCONDIDO ROADWAY CLASSIFICATION TABLES

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TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

MOBILITY ELEMENT ROADS		LEVELS OF SERVICE				
Road Classification	# of Travel Lanes	A	B	C	D	E
Expressway (6.1)	6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)	6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median (4.1A)	4	<14,800	<24,700	<29,600	<33,400
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000
NON-MOBILITY ELEMENT ROADS**		LEVELS OF SERVICE				
Residential Collector	2	-	-	<4,500	-	-
Rural Residential Collector***	2	-	-	<4,500	-	-
Residential Road	2	-	-	<1,500	-	-
Rural Residential Road***	2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road	2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.

Table

CITY OF ESCONDIDO PROPOSED LEVEL OF SERVICE STANDARDS

STREET SEGMENT AVERAGE DAILY VEHICLE TRIP THRESHOLDS

Street Classification	Lanes	Cross Sections	Level of Service				
			A	B	C	D	E
Prime Arterial	(8lanes)	116/136 (NP)	23,800	37,800	51,800	62,300	70,000
	(6lanes)	106/126 (NP)	20,400	32,400	44,400	53,400	60,000
Major Road	(6lanes)	90/110 (NP)	17,000	27,000	37,000	44,500	50,000
	(4lanes)	82/102 (NP)	12,600	20,000	27,400	32,900	37,000
Collector	(4lanes)	64/84 (NP)	11,600	18,500	25,300	30,400	34,200
	(4lanes)	(WP)	6,800	10,800	14,800	17,800	20,000
Local Collector	(2lanes)	42/66 (NP)	5,100	8,100	11,100	13,400	15,000
		(WP)	3,400	5,400	7,400	8,900	10,000
Rural collector	(2lanes)						

(NP) No Parking

(WP) With Parking

The following V/C Ratios were utilized for determining Existing and Future Level of Service.

Level of Service

Volume/Capacity
(V/C) Ratio

A-	Less than or Equal to	0.00	to	0.34
B-	Less than or Equal to	0.35	to	0.54
C-	Less than or Equal to	0.55	to	0.74
D-	Less than or Equal to	0.75	to	0.89
E-	Less than or Equal to	0.90	to	1.00

v/c 0.74

APPENDIX E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING

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Existing AM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	437	7	145	379	482	0	0	560	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1606	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1606	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	475	8	158	412	524	0	0	609	323
RTOR Reduction (vph)	0	0	0	0	3	110	0	0	0	0	0	189
Lane Group Flow (vph)	0	0	0	252	244	32	412	524	0	0	609	134
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				22.3	22.3	22.3	19.8	66.5			41.5	41.5
Effective Green, g (s)				22.3	22.3	22.3	19.8	66.5			41.5	41.5
Actuated g/C Ratio				0.22	0.22	0.22	0.20	0.66			0.42	0.42
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				375	358	335	680	2353			2110	657
v/s Ratio Prot				0.15	c0.15		c0.12	0.15			c0.12	
v/s Ratio Perm						0.02						0.08
v/c Ratio				0.67	0.68	0.09	0.61	0.22			0.29	0.20
Uniform Delay, d1				35.5	35.6	30.8	36.5	6.6			19.4	18.7
Progression Factor				1.00	1.00	1.00	0.71	0.55			1.00	1.00
Incremental Delay, d2				4.7	5.3	0.1	1.4	0.2			0.3	0.7
Delay (s)				40.2	40.9	31.0	27.5	3.8			19.8	19.4
Level of Service				D	D	C	C	A			B	B
Approach Delay (s)		0.0			38.4			14.3			19.7	
Approach LOS		A			D			B			B	
Intersection Summary												
HCM Average Control Delay			22.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			59.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
2: SR 78 EB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	137	671	0	0	0	0	613	402	189	808	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Frt	1.00	0.91	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1532	1504					3539	2787	3433	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1532	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	270	149	729	0	0	0	0	666	437	205	878	0
RTOR Reduction (vph)	0	58	58	0	0	0	0	0	268	0	0	0
Lane Group Flow (vph)	243	410	379	0	0	0	0	666	169	205	878	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	34.6	34.6	34.6					38.6	38.6	10.4	54.3	
Effective Green, g (s)	34.6	34.6	34.6					38.6	38.6	10.4	54.3	
Actuated g/C Ratio	0.35	0.35	0.35					0.39	0.39	0.10	0.54	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	582	530	520					1366	1076	357	1922	
v/s Ratio Prot	0.14	c0.27						0.19		0.06	c0.25	
v/s Ratio Perm			0.25						0.06			
v/c Ratio	0.42	0.77	0.73					0.49	0.16	0.57	0.46	
Uniform Delay, d1	25.0	29.2	28.6					23.2	20.1	42.7	13.9	
Progression Factor	1.00	1.00	1.00					0.59	1.00	1.11	0.38	
Incremental Delay, d2	0.5	6.9	5.1					1.2	0.3	2.1	0.8	
Delay (s)	25.5	36.1	33.7					15.0	20.4	49.5	6.0	
Level of Service	C	D	C					B	C	D	A	
Approach Delay (s)		32.9			0.0			17.1			14.2	
Approach LOS		C			A			B			B	
Intersection Summary												
HCM Average Control Delay			21.6									
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			59.3%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	294	165	63	339	205	200	543	30	364	748	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4897	4897
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4897	4897
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	320	179	68	368	223	217	590	33	396	813	266
RTOR Reduction (vph)	0	0	131	0	0	182	0	0	19	0	53	0
Lane Group Flow (vph)	283	320	48	68	368	41	217	590	14	396	1026	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.5	26.7	26.7	4.0	18.2	18.2	11.0	33.8	33.8	15.5	38.3	38.3
Effective Green, g (s)	13.5	26.7	26.7	4.0	18.2	18.2	11.0	33.8	33.8	15.5	38.3	38.3
Actuated g/C Ratio	0.14	0.27	0.27	0.04	0.18	0.18	0.11	0.34	0.34	0.16	0.38	0.38
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	463	945	423	137	644	288	378	1719	535	532	1876	1876
v/s Ratio Prot	c0.08	0.09		0.02	c0.10		c0.06	0.12		c0.12	c0.21	
v/s Ratio Perm			0.03			0.03			0.01			
v/c Ratio	0.61	0.34	0.11	0.50	0.57	0.14	0.57	0.34	0.03	0.74	0.55	0.55
Uniform Delay, d1	40.8	29.5	27.7	47.0	37.3	34.3	42.3	24.8	22.1	40.4	24.1	24.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.81	0.81
Incremental Delay, d2	2.4	0.2	0.1	2.8	1.2	0.2	2.1	0.5	0.1	4.8	1.0	1.0
Delay (s)	43.2	29.7	27.8	49.8	38.6	34.6	44.4	25.3	22.2	53.6	20.6	20.6
Level of Service	D	C	C	D	D	C	D	C	C	D	C	C
Approach Delay (s)		34.2			38.4			30.1			29.4	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			32.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			58.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	0	19	0	0	0	83	528	1	64	900	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0				4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00	0.95	
Frt	1.00		0.85				1.00	1.00		1.00	0.98	
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770		1583				1770	3538		1770	3463	
Flt Permitted	0.76		1.00				0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1410		1583				1770	3538		1770	3463	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	205	0	21	0	0	0	90	574	1	70	978	164
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	205	0	4	0	0	0	90	575	0	70	1129	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.9		16.9				7.4	48.3		6.7	47.6	
Effective Green, g (s)	16.9		16.9				7.4	48.3		6.7	47.6	
Actuated g/C Ratio	0.20		0.20				0.09	0.58		0.08	0.57	
Clearance Time (s)	4.0		4.0				4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0		3.0				3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	284		319				156	2037		141	1965	
v/s Ratio Prot							c0.05	0.16		0.04	c0.33	
v/s Ratio Perm	c0.15		0.00									
v/c Ratio	0.72		0.01				0.58	0.28		0.50	0.57	
Uniform Delay, d1	31.3		26.8				36.7	9.0		37.0	11.7	
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.7		0.0				5.1	0.3		2.7	1.2	
Delay (s)	40.0		26.8				41.8	9.4		39.7	12.9	
Level of Service	D		C				D	A		D	B	
Approach Delay (s)		38.8			0.0			13.8			14.4	
Approach LOS		D			A			B			B	
Intersection Summary												
HCM Average Control Delay			16.8				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			83.9				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			54.8%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
5: Enterprise St & Harmony Grove Rd

Harmony Grove Parcel
8/25/2014

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	129	99	145	340	106	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	140	108	158	370	115	158
RTOR Reduction (vph)	0	87	0	0	0	73
Lane Group Flow (vph)	140	21	158	370	115	85
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	10.0	10.0	8.2	22.7	19.0	27.2
Effective Green, g (s)	10.0	10.0	8.2	22.7	19.0	27.2
Actuated g/C Ratio	0.20	0.20	0.16	0.45	0.37	0.54
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	367	312	286	834	663	990
v/s Ratio Prot	0.08		c0.09	c0.20	c0.06	0.01
v/s Ratio Perm		0.01				0.04
v/c Ratio	0.38	0.07	0.55	0.44	0.17	0.09
Uniform Delay, d1	17.7	16.6	19.6	9.6	10.6	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	2.3	0.4	0.6	0.0
Delay (s)	18.3	16.7	21.9	10.0	11.2	5.7
Level of Service	B	B	C	B	B	A
Approach Delay (s)	17.6			13.6	8.0	
Approach LOS	B			B	A	
Intersection Summary						
HCM Average Control Delay			13.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.32			
Actuated Cycle Length (s)			50.7		Sum of lost time (s)	9.0
Intersection Capacity Utilization			31.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing AM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	10	0	0	226	8	147	82	0	260	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	0	0	246	9	160	89	0	283	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	626	549	141	329	460	80	283			249		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	626	549	141	329	460	80	283			249		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	75	99			100		
cM capacity (veh/h)	273	439	881	590	493	964	1277			1314		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	11	246	9	80	80	89	188	94				
Volume Left	0	0	9	0	0	0	0	0				
Volume Right	11	246	0	0	0	89	0	0				
cSH	881	964	1277	1700	1700	1700	1700	1700				
Volume to Capacity	0.01	0.25	0.01	0.05	0.05	0.05	0.11	0.06				
Queue Length 95th (ft)	1	25	1	0	0	0	0	0				
Control Delay (s)	9.1	10.0	7.8	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.1	10.0	0.3				0.0					
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			24.7%		ICU Level of Service				A			
Analysis Period (min)			15									

Existing AM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	331	740	0	0	770	177	303	3	341	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1556		1775	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1556		1775	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	360	804	0	0	837	192	329	3	371	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	130	0	0	86	0	0	0
Lane Group Flow (vph)	360	804	0	0	837	62	0	332	285	0	0	0
Confl. Peds. (#/hr)			2			3	6					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	16.2	54.5			34.1	34.1		40.4	40.4			
Effective Green, g (s)	16.2	54.5			34.1	34.1		40.4	40.4			
Actuated g/C Ratio	0.15	0.52			0.32	0.32		0.38	0.38			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	530	2639			1651	505		683	609			
v/s Ratio Prot	c0.10	0.16			c0.16			c0.19				
v/s Ratio Perm						0.04			0.18			
v/c Ratio	0.68	0.30			0.51	0.12		0.49	0.47			
Uniform Delay, d1	41.9	14.4			28.7	24.9		24.4	24.2			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	3.5	0.3			1.1	0.5		2.5	2.6			
Delay (s)	45.4	14.7			29.8	25.4		26.9	26.8			
Level of Service	D	B			C	C		C	C			
Approach Delay (s)		24.2			29.0			26.9			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM Average Control Delay			26.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			53.2%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	768	75	103	812	158	36	42	90	213	101	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	3433	5085	1560	3433	6016	1258	1770	1863	1583		3180	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	3433	5085	1560	3433	6016	1258	1770	1863	1583		3180	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	835	82	112	883	172	39	46	98	232	110	502
RTOR Reduction (vph)	0	0	50	0	2	90	0	0	87	0	277	0
Lane Group Flow (vph)	75	835	32	112	898	65	39	46	11	0	567	0
Confl. Peds. (#/hr)			2			5						
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	6.6	42.4	42.4	10.3	46.1	46.1	12.0	12.0	12.0		26.4	
Effective Green, g (s)	6.6	42.4	42.4	10.3	46.1	46.1	12.0	12.0	12.0		26.4	
Actuated g/C Ratio	0.06	0.39	0.39	0.09	0.42	0.42	0.11	0.11	0.11		0.24	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	206	1960	601	321	2521	527	193	203	173		763	
v/s Ratio Prot	0.02	c0.16		c0.03	c0.15		0.02	c0.02			c0.18	
v/s Ratio Perm			0.02			0.05			0.01			
v/c Ratio	0.36	0.43	0.05	0.35	0.36	0.12	0.20	0.23	0.06		0.74	
Uniform Delay, d1	49.7	24.9	21.2	46.7	21.8	19.6	44.6	44.8	44.0		38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.1	0.7	0.2	0.7	0.1	0.1	0.5	0.6	0.2		3.9	
Delay (s)	50.8	25.5	21.4	47.4	21.9	19.7	45.2	45.3	44.1		42.6	
Level of Service	D	C	C	D	C	B	D	D	D		D	
Approach Delay (s)		27.1			24.1			44.6			42.6	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			31.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			24.4			
Intersection Capacity Utilization			71.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
9: Auto Park Way & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	365	320	75	583	31	229	650	39	98	832	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Flt Protected	1.00	0.93		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3291		3433	3512		3433	5085	1583	3433	5085	1583
Satd. Flow (perm)	3433	3291		3433	3512		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	195	397	348	82	634	34	249	707	42	107	904	609
RTOR Reduction (vph)	0	150	0	0	4	0	0	0	28	0	0	15
Lane Group Flow (vph)	195	595	0	82	664	0	249	707	14	107	904	594
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	15.1	33.1		3.9	21.9		9.8	31.3	31.3	5.4	24.9	40.0
Effective Green, g (s)	15.1	33.1		3.9	21.9		9.8	31.3	31.3	5.4	24.9	40.0
Actuated g/C Ratio	0.16	0.36		0.04	0.24		0.11	0.34	0.34	0.06	0.27	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	565	1188		146	839		367	1736	540	202	1381	777
v/s Ratio Prot	0.06	0.18		0.02	c0.19		c0.07	0.14		0.03	0.18	c0.13
v/s Ratio Perm									0.01			0.25
v/c Ratio	0.35	0.50		0.56	0.79		0.68	0.41	0.03	0.53	0.65	0.76
Uniform Delay, d1	33.9	22.9		43.1	32.8		39.4	23.1	20.1	41.9	29.6	21.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3		4.9	5.1		4.9	0.7	0.1	2.5	2.4	4.5
Delay (s)	34.3	23.2		47.9	37.9		44.4	23.8	20.2	44.4	32.0	26.4
Level of Service	C	C		D	D		D	C	C	D	C	C
Approach Delay (s)		25.5			39.0			28.8			30.7	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			30.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			91.7			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			70.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	195	12	117	270	146	7	577	128	93	1058	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3509		1770	3352		1770	4947		1770	4936	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3509		1770	3352		1770	4947		1770	4936	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	212	13	127	293	159	8	627	139	101	1150	279
RTOR Reduction (vph)	0	5	0	0	84	0	0	31	0	0	33	0
Lane Group Flow (vph)	175	220	0	127	368	0	8	735	0	101	1396	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	17.4		10.7	16.1		0.7	34.5		7.8	41.6	
Effective Green, g (s)	12.0	17.4		10.7	16.1		0.7	34.5		7.8	41.6	
Actuated g/C Ratio	0.13	0.19		0.12	0.18		0.01	0.38		0.09	0.46	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	235	675		210	597		14	1888		153	2271	
v/s Ratio Prot	c0.10	0.06		0.07	c0.11		0.00	0.15		c0.06	c0.28	
v/s Ratio Perm												
v/c Ratio	0.74	0.33		0.60	0.62		0.57	0.39		0.66	0.61	
Uniform Delay, d1	37.7	31.4		37.8	34.3		44.7	20.3		40.0	18.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.1	0.3		4.9	1.9		46.0	0.6		10.2	1.3	
Delay (s)	49.8	31.7		42.7	36.2		90.7	20.9		50.2	19.6	
Level of Service	D	C		D	D		F	C		D	B	
Approach Delay (s)		39.6			37.6			21.6			21.6	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			90.4			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			67.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	19	24	14	42	49	20	637	6	25	987	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Flt Protected	1.00	0.92		1.00	0.92		1.00	1.00		1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1708		1770	1713		1770	3534		1770	3539	1583
Satd. Flow (perm)	1770	1708		1770	1713		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	21	26	15	46	53	22	692	7	27	1073	46
RTOR Reduction (vph)	0	24	0	0	48	0	0	1	0	0	0	22
Lane Group Flow (vph)	54	23	0	15	51	0	22	698	0	27	1073	24
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	5.9	5.9		6.0	6.0		0.7	31.6		1.9	32.8	32.8
Effective Green, g (s)	5.9	5.9		6.0	6.0		0.7	31.6		1.9	32.8	32.8
Actuated g/C Ratio	0.09	0.09		0.09	0.09		0.01	0.50		0.03	0.52	0.52
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	159		168	162		20	1761		53	1831	819
v/s Ratio Prot	c0.03	0.01		0.01	c0.03		0.01	0.20		c0.02	c0.30	
v/s Ratio Perm												0.02
v/c Ratio	0.33	0.15		0.09	0.31		1.10	0.40		0.51	0.59	0.03
Uniform Delay, d1	26.9	26.4		26.2	26.8		31.3	9.9		30.3	10.6	7.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.4		0.2	1.1		234.8	0.7		7.5	1.4	0.1
Delay (s)	28.1	26.9		26.4	27.9		266.1	10.6		37.8	12.0	7.6
Level of Service	C	C		C	C		F	B		D	B	A
Approach Delay (s)		27.5			27.7			18.4			12.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			63.4			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			44.2%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
12: W Citracado Pkwy & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	9	345	80	11	46	290	283	38	123	926	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3477		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3477		1770	3526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	10	375	87	12	50	315	308	41	134	1007	26
RTOR Reduction (vph)	0	0	333	0	0	46	0	9	0	0	2	0
Lane Group Flow (vph)	80	10	42	87	12	4	315	340	0	134	1031	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	7.7	9.5	9.5	5.7	7.5	7.5	19.3	42.2		9.3	32.2	
Effective Green, g (s)	7.7	9.5	9.5	5.7	7.5	7.5	19.3	42.2		9.3	32.2	
Actuated g/C Ratio	0.09	0.11	0.11	0.07	0.09	0.09	0.23	0.50		0.11	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	209	178	119	165	140	403	1732		194	1340	
v/s Ratio Prot	0.05	0.01		c0.05	0.01		c0.18	0.10		0.08	c0.29	
v/s Ratio Perm			c0.03			0.00						
v/c Ratio	0.50	0.05	0.24	0.73	0.07	0.03	0.78	0.20		0.69	0.77	
Uniform Delay, d1	36.7	33.6	34.3	38.7	35.4	35.3	30.7	11.8		36.3	23.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.1	0.7	20.5	0.2	0.1	9.5	0.1		10.1	2.7	
Delay (s)	39.1	33.7	35.0	59.2	35.6	35.4	40.2	11.9		46.4	25.7	
Level of Service	D	C	C	E	D	D	D	B		D	C	
Approach Delay (s)		35.7			49.3			25.3			28.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			30.1				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			84.7				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			64.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	552	627	121	1156	0	0	0	0	155	7	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		3374	1467	1687	3374					1603	1615	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		3374	1467	1687	3374					1603	1615	1509
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	708	667	175	1344	0	0	0	0	199	12	96
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	37
Lane Group Flow (vph)	0	708	667	175	1344	0	0	0	0	105	106	59
Confl. Peds. (#/hr)			11									
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type			Perm	Prot						Split		custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									4
Actuated Green, G (s)		46.5	46.5	13.3	55.8					11.4	11.4	20.2
Effective Green, g (s)		46.5	46.5	13.3	55.8					11.4	11.4	20.2
Actuated g/C Ratio		0.55	0.55	0.16	0.66					0.13	0.13	0.24
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1846	803	264	2215					215	217	359
v/s Ratio Prot		0.21		c0.10	0.40					0.07	c0.07	0.04
v/s Ratio Perm			c0.45									
v/c Ratio		0.38	0.83	0.66	0.61					0.49	0.49	0.16
Uniform Delay, d1		11.0	16.0	33.7	8.3					34.1	34.1	25.7
Progression Factor		1.00	1.00	1.11	1.12					1.00	1.00	1.00
Incremental Delay, d2		0.6	9.7	5.4	1.0					1.7	1.7	0.2
Delay (s)		11.6	25.7	42.9	10.3					35.8	35.8	25.9
Level of Service		B	C	D	B					D	D	C
Approach Delay (s)		18.5			14.1			0.0			32.7	
Approach LOS		B			B			A			C	
Intersection Summary												
HCM Average Control Delay			17.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			89.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	595	0	0	633	303	644	1	178	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	137	744	0	0	719	344	776	4	241	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	200	0	0	118	0	0	0
Lane Group Flow (vph)	137	744	0	0	719	144	388	392	123	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	8.9	48.8			35.7	35.7	26.6	26.6	26.6			
Effective Green, g (s)	8.9	48.8			35.7	35.7	26.6	26.6	26.6			
Actuated g/C Ratio	0.10	0.57			0.42	0.42	0.31	0.31	0.31			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	343	1937			1417	620	502	503	472			
v/s Ratio Prot	0.04	c0.22			c0.21		0.24	c0.24				
v/s Ratio Perm						0.10			0.08			
v/c Ratio	0.40	0.38			0.51	0.23	0.77	0.78	0.26			
Uniform Delay, d1	35.6	9.9			18.2	15.8	26.5	26.5	21.8			
Progression Factor	1.63	0.80			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.5			0.3	0.2	7.3	7.5	0.3			
Delay (s)	58.6	8.5			18.5	16.0	33.7	34.0	22.1			
Level of Service	E	A			B	B	C	C	C			
Approach Delay (s)		16.3			17.7			31.1			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			21.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			89.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM
15: Kauana Loa Dr & Country Club Dr

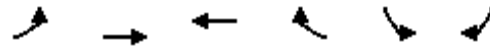
Harmony Grove Parcel
8/25/2014

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	8	70	118	15	69	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	76	128	16	75	108
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	85	145	183			
Volume Left (vph)	9	0	75			
Volume Right (vph)	76	16	0			
Hadj (s)	-0.48	-0.03	0.12			
Departure Headway (s)	4.1	4.2	4.4			
Degree Utilization, x	0.10	0.17	0.22			
Capacity (veh/h)	799	819	797			
Control Delay (s)	7.6	8.1	8.6			
Approach Delay (s)	7.6	8.1	8.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.2			
HCM Level of Service			A			
Intersection Capacity Utilization			30.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Existing AM
16: Country Club Dr & Harmony Grove Village Pkwy

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	113	214	144	16	6	152
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	123	233	157	17	7	165
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	123	233	157	17	7	165
Volume Left (vph)	123	0	0	0	7	0
Volume Right (vph)	0	0	0	17	0	165
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	5.7	5.2	5.4	4.7	6.3	5.1
Degree Utilization, x	0.19	0.33	0.23	0.02	0.01	0.23
Capacity (veh/h)	607	673	640	729	534	656
Control Delay (s)	8.8	9.6	8.8	6.6	8.2	8.4
Approach Delay (s)	9.3		8.6		8.4	
Approach LOS	A		A		A	
Intersection Summary						
Delay			8.9			
HCM Level of Service			A			
Intersection Capacity Utilization			27.2%		ICU Level of Service	A
Analysis Period (min)			15			

Existing AM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	202	3	9	383	2	5	11	21	2	7	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Flt	1.00	1.00		1.00	1.00	0.85		0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	1859		1770	1863	1583		1707		1770	1599	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	1859		1770	1863	1583		1707		1770	1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	220	3	10	416	2	5	12	23	2	8	138
RTOR Reduction (vph)	0	1	0	0	0	1	0	18	0	0	108	0
Lane Group Flow (vph)	52	222	0	10	416	1	0	22	0	2	38	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	3.1	28.7		0.8	26.4	44.4		18.0		18.0	18.0	
Effective Green, g (s)	3.1	28.7		0.8	26.4	44.4		18.0		18.0	18.0	
Actuated g/C Ratio	0.04	0.35		0.01	0.32	0.54		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	67	655		17	603	940		377		391	353	
v/s Ratio Prot	c0.03	0.12		0.01	c0.22	0.00		c0.01		0.00	c0.02	
v/s Ratio Perm						0.00						
v/c Ratio	0.78	0.34		0.59	0.69	0.00		0.06		0.01	0.11	
Uniform Delay, d1	38.9	19.4		40.2	24.0	8.4		25.1		24.8	25.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	42.0	1.4		42.8	6.4	0.0		0.3		0.0	0.6	
Delay (s)	80.8	20.8		83.0	30.3	8.5		25.4		24.8	26.0	
Level of Service	F	C		F	C	A		C		C	C	
Approach Delay (s)		32.2			31.5			25.4			26.0	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			81.5			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			41.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	68	12	406	38	15	231
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	13	441	41	16	251
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			87		1004	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			87		1004	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			71		91	74
cM capacity (veh/h)			1509		190	980
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	87	483	267			
Volume Left	0	441	16			
Volume Right	13	0	251			
cSH	1700	1509	781			
Volume to Capacity	0.05	0.29	0.34			
Queue Length 95th (ft)	0	31	38			
Control Delay (s)	0.0	7.9	12.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	7.9	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay		8.4				
Intersection Capacity Utilization		52.9%		ICU Level of Service		A
Analysis Period (min)		15				

Existing AM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	111	1	276	70	40	2	155	133	10	334	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1860		1770	1762		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1860		1770	1762		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	121	1	300	76	43	2	168	145	11	363	79
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	87	0	0	47
Lane Group Flow (vph)	101	122	0	300	94	0	2	168	58	11	363	32
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.4	8.3		16.4	17.3		0.6	28.8	28.8	0.6	28.8	28.8
Effective Green, g (s)	7.4	8.3		16.4	17.3		0.6	28.8	28.8	0.6	28.8	28.8
Actuated g/C Ratio	0.10	0.12		0.23	0.24		0.01	0.40	0.40	0.01	0.40	0.40
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	182	214		403	423		15	744	632	15	744	632
v/s Ratio Prot	0.06	c0.07		c0.17	0.05		0.00	0.09		c0.01	c0.19	
v/s Ratio Perm									0.04			0.02
v/c Ratio	0.55	0.57		0.74	0.22		0.13	0.23	0.09	0.73	0.49	0.05
Uniform Delay, d1	30.8	30.2		25.9	22.0		35.5	14.3	13.5	35.7	16.1	13.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	3.6		7.3	0.3		4.0	0.7	0.3	103.2	2.3	0.1
Delay (s)	34.4	33.8		33.2	22.3		39.5	15.0	13.8	138.9	18.4	13.4
Level of Service	C	C		C	C		D	B	B	F	B	B
Approach Delay (s)		34.1			30.1			14.6			20.5	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay			24.2			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			72.1			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			47.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	469	5	248	502	884	0	0	727	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1599	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1599	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	510	5	270	546	961	0	0	790	378
RTOR Reduction (vph)	0	0	0	0	5	77	0	0	0	0	0	230
Lane Group Flow (vph)	0	0	0	270	267	166	546	961	0	0	790	148
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				24.2	24.2	24.2	20.3	64.6			39.1	39.1
Effective Green, g (s)				24.2	24.2	24.2	20.3	64.6			39.1	39.1
Actuated g/C Ratio				0.24	0.24	0.24	0.20	0.65			0.39	0.39
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				407	387	364	697	2286			1988	619
v/s Ratio Prot				0.16	c0.17		c0.16	c0.27			0.16	
v/s Ratio Perm						0.11						0.09
v/c Ratio				0.66	0.69	0.46	0.78	0.42			0.40	0.24
Uniform Delay, d1				34.2	34.5	32.3	37.8	8.6			22.0	20.5
Progression Factor				1.00	1.00	1.00	1.38	0.13			1.00	1.00
Incremental Delay, d2				4.0	5.3	0.9	3.8	0.4			0.6	0.9
Delay (s)				38.3	39.8	33.2	55.9	1.5			22.6	21.4
Level of Service				D	D	C	E	A			C	C
Approach Delay (s)		0.0			37.2			21.2			22.2	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM Average Control Delay			25.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			10.8			
Intersection Capacity Utilization			68.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
2: SR 78 EB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	343	56	471	0	0	0	0	1043	518	366	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Frt	1.00	0.90	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1515	1504					3539	2787	3433	3539	
Flt Permitted	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1515	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	373	61	512	0	0	0	0	1134	563	398	902	0
RTOR Reduction (vph)	0	77	94	0	0	0	0	0	339	0	0	0
Lane Group Flow (vph)	328	239	208	0	0	0	0	1134	224	398	902	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	27.0	27.0	27.0					39.8	39.8	16.8	61.8	
Effective Green, g (s)	27.0	27.0	27.0					39.8	39.8	16.8	61.8	
Actuated g/C Ratio	0.27	0.27	0.27					0.40	0.40	0.17	0.62	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	454	409	406					1409	1109	577	2187	
v/s Ratio Prot	c0.20	0.16						c0.32		c0.12	0.25	
v/s Ratio Perm			0.14						0.08			
v/c Ratio	0.72	0.58	0.51					0.80	0.20	0.69	0.41	
Uniform Delay, d1	33.1	31.6	30.9					26.7	19.7	39.1	9.8	
Progression Factor	1.00	1.00	1.00					0.46	0.09	1.03	1.15	
Incremental Delay, d2	5.6	2.1	1.1					3.9	0.3	3.2	0.5	
Delay (s)	38.7	33.7	32.0					16.1	2.0	43.6	11.8	
Level of Service	D	C	C					B	A	D	B	
Approach Delay (s)		34.9			0.0			11.5			21.5	
Approach LOS		C			A			B			C	
Intersection Summary												
HCM Average Control Delay			20.4									
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			68.7%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	311	485	174	37	362	438	327	907	44	172	487	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	0.94
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4762	4762
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4762	4762
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	527	189	40	393	476	355	986	48	187	529	389
RTOR Reduction (vph)	0	0	134	0	0	215	0	0	18	0	134	0
Lane Group Flow (vph)	338	527	55	40	393	261	355	986	30	187	784	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.3	29.3	29.3	8.2	22.2	22.2	12.4	32.5	32.5	10.0	30.1	30.1
Effective Green, g (s)	15.3	29.3	29.3	8.2	22.2	22.2	12.4	32.5	32.5	10.0	30.1	30.1
Actuated g/C Ratio	0.15	0.29	0.29	0.08	0.22	0.22	0.12	0.32	0.32	0.10	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	525	1037	464	282	786	351	426	1653	514	343	1433	1433
v/s Ratio Prot	c0.10	0.15		0.01	0.11		c0.10	c0.19		0.05	c0.16	
v/s Ratio Perm			0.03			c0.17			0.02			
v/c Ratio	0.64	0.51	0.12	0.14	0.50	0.74	0.83	0.60	0.06	0.55	0.55	0.55
Uniform Delay, d1	39.8	29.4	25.9	42.6	34.0	36.3	42.8	28.3	23.2	42.8	29.2	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.74	0.74
Incremental Delay, d2	2.7	0.4	0.1	0.2	0.5	8.3	13.1	1.6	0.2	1.6	1.4	1.4
Delay (s)	42.5	29.8	26.0	42.9	34.5	44.6	55.9	29.9	23.4	38.6	23.1	23.1
Level of Service	D	C	C	D	C	D	E	C	C	D	C	C
Approach Delay (s)		33.2			40.2			36.3			25.8	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM Average Control Delay			33.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			66.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	0	38	0	0	1	68	915	1	80	648	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	
Frt	1.00		0.85		0.85		1.00	1.00		1.00	0.96	
Flt Protected	0.95		1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770		1583		1583		1770	3539		1770	3409	
Flt Permitted	0.76		1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1410		1583		1583		1770	3539		1770	3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	0	41	0	0	1	74	995	1	87	704	229
RTOR Reduction (vph)	0	0	32	0	1	0	0	0	0	0	30	0
Lane Group Flow (vph)	240	0	9	0	0	0	74	996	0	87	903	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	18.6		18.6		18.6		6.6	44.0		7.2	44.6	
Effective Green, g (s)	18.6		18.6		18.6		6.6	44.0		7.2	44.6	
Actuated g/C Ratio	0.23		0.23		0.23		0.08	0.54		0.09	0.55	
Clearance Time (s)	4.0		4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321		360		360		143	1904		156	1859	
v/s Ratio Prot					0.00		0.04	c0.28		c0.05	0.26	
v/s Ratio Perm	c0.17		0.01									
v/c Ratio	0.75		0.03		0.00		0.52	0.52		0.56	0.49	
Uniform Delay, d1	29.4		24.6		24.4		36.1	12.2		35.8	11.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2		0.0		0.0		3.1	1.0		4.3	0.9	
Delay (s)	38.6		24.6		24.4		39.2	13.2		40.0	12.4	
Level of Service	D		C		C		D	B		D	B	
Approach Delay (s)		36.5			24.4			15.0			14.8	
Approach LOS		D			C			B			B	
Intersection Summary												
HCM Average Control Delay			17.5				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			81.8				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			58.7%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
5: Enterprise St & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	287	149	205	160	115	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	162	223	174	125	488
RTOR Reduction (vph)	0	120	0	0	0	136
Lane Group Flow (vph)	312	42	223	174	125	352
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	14.7	14.7	12.4	31.6	16.5	28.9
Effective Green, g (s)	14.7	14.7	12.4	31.6	16.5	28.9
Actuated g/C Ratio	0.26	0.26	0.22	0.55	0.29	0.51
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	480	408	384	1031	511	926
v/s Ratio Prot	c0.17		c0.13	0.09	0.07	c0.08
v/s Ratio Perm		0.03				0.14
v/c Ratio	0.65	0.10	0.58	0.17	0.24	0.38
Uniform Delay, d1	18.9	16.2	20.0	6.3	15.5	8.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.1	2.2	0.1	1.1	0.3
Delay (s)	22.0	16.3	22.3	6.4	16.7	8.9
Level of Service	C	B	C	A	B	A
Approach Delay (s)	20.1			15.3	10.5	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			14.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			57.1		Sum of lost time (s)	13.5
Intersection Capacity Utilization			50.4%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing PM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	1	0	0	154	19	153	61	0	358	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1	0	0	167	21	166	66	0	389	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	681	663	195	403	597	83	389			233		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	681	663	195	403	597	83	389			233		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	83	98			100		
cM capacity (veh/h)	274	373	814	524	408	960	1166			1332		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	1	167	21	83	83	66	259	130				
Volume Left	0	0	21	0	0	0	0	0				
Volume Right	1	167	0	0	0	66	0	0				
cSH	814	960	1166	1700	1700	1700	1700	1700				
Volume to Capacity	0.00	0.17	0.02	0.05	0.05	0.04	0.15	0.08				
Queue Length 95th (ft)	0	16	1	0	0	0	0	0				
Control Delay (s)	9.4	9.5	8.1	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	A	A									
Approach Delay (s)	9.4	9.5	0.7	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			20.4%	ICU Level of Service					A			
Analysis Period (min)			15									

Existing PM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  							
Volume (vph)	779	890	0	0	1016	275	210	1	298	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1550		1774	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1550		1774	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	847	967	0	0	1104	299	228	1	324	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	228	0	0	73	0	0	0
Lane Group Flow (vph)	847	967	0	0	1104	71	0	229	251	0	0	0
Confl. Peds. (#/hr)						5	10					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	29.8	58.9			24.9	24.9		36.0	36.0			
Effective Green, g (s)	29.8	58.9			24.9	24.9		36.0	36.0			
Actuated g/C Ratio	0.28	0.56			0.24	0.24		0.34	0.34			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	974	2852			1206	368		608	543			
v/s Ratio Prot	c0.25	0.19			c0.22			0.13				
v/s Ratio Perm						0.05			c0.16			
v/c Ratio	0.87	0.34			0.92	0.19		0.38	0.46			
Uniform Delay, d1	35.8	12.5			39.0	32.0		26.0	26.9			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	8.4	0.3			12.2	1.2		1.8	2.8			
Delay (s)	44.1	12.8			51.3	33.2		27.8	29.8			
Level of Service	D	B			D	C		C	C			
Approach Delay (s)		27.4			47.4			29.0			0.0	
Approach LOS		C			D			C			A	
Intersection Summary												
HCM Average Control Delay			35.1			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			65.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱	↰	↑	↱		↰↰	
Volume (vph)	78	1201	77	160	736	330	40	36	243	225	123	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85		0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1549	3433	5892	1282	1770	1863	1560		3193	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1549	3433	5892	1282	1770	1863	1560		3193	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	1305	84	174	800	359	43	39	264	245	134	355
RTOR Reduction (vph)	0	0	53	0	25	122	0	0	233	0	177	0
Lane Group Flow (vph)	85	1305	31	174	926	86	43	39	31	0	557	0
Confl. Peds. (#/hr)			8						1			2
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	6.5	41.0	41.0	11.0	45.5	45.5	12.8	12.8	12.8		26.3	
Effective Green, g (s)	6.5	41.0	41.0	11.0	45.5	45.5	12.8	12.8	12.8		26.3	
Actuated g/C Ratio	0.06	0.37	0.37	0.10	0.41	0.41	0.12	0.12	0.12		0.24	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	203	1895	577	343	2437	530	206	217	182		763	
v/s Ratio Prot	0.02	c0.26		c0.05	0.16		c0.02	0.02			c0.17	
v/s Ratio Perm			0.02			0.07			0.02			
v/c Ratio	0.42	0.69	0.05	0.51	0.38	0.16	0.21	0.18	0.17		0.73	
Uniform Delay, d1	49.9	29.1	22.1	46.9	22.4	20.3	44.0	43.9	43.8		38.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.4	2.1	0.2	1.2	0.1	0.1	0.5	0.4	0.4		3.5	
Delay (s)	51.3	31.2	22.3	48.1	22.5	20.4	44.5	44.3	44.2		42.1	
Level of Service	D	C	C	D	C	C	D	D	D		D	
Approach Delay (s)		31.8			25.5			44.3			42.1	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			32.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			76.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
9: Auto Park Way & W Valley Pkwy

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	416	717	215	117	329	168	246	910	51	189	675	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Flt Protected	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3417		3433	3360		3433	5085	1583	3433	5085	1583
Satd. Flow (perm)	3433	3417		3433	3360		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	452	779	234	127	358	183	267	989	55	205	734	255
RTOR Reduction (vph)	0	36	0	0	81	0	0	0	39	0	0	64
Lane Group Flow (vph)	452	977	0	127	460	0	267	989	16	205	734	191
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	13.4	26.7		4.0	17.3		8.0	23.0	23.0	5.0	20.0	33.4
Effective Green, g (s)	13.4	26.7		4.0	17.3		8.0	23.0	23.0	5.0	20.0	33.4
Actuated g/C Ratio	0.17	0.34		0.05	0.22		0.10	0.29	0.29	0.06	0.25	0.42
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	585	1159		174	739		349	1486	463	218	1292	772
v/s Ratio Prot	c0.13	c0.29		0.04	0.14		c0.08	c0.19		0.06	0.14	0.04
v/s Ratio Perm									0.01			0.08
v/c Ratio	0.77	0.84		0.73	0.62		0.77	0.67	0.03	0.94	0.57	0.25
Uniform Delay, d1	31.2	24.1		36.8	27.7		34.4	24.5	19.9	36.7	25.6	14.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	5.7		14.2	1.6		9.6	2.4	0.1	44.4	1.8	0.2
Delay (s)	37.5	29.8		51.0	29.4		44.0	26.8	20.1	81.1	27.4	14.7
Level of Service	D	C		D	C		D	C	C	F	C	B
Approach Delay (s)		32.2			33.5			30.1			33.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			32.2			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			78.7			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			69.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	456	15	152	216	73	23	925	196	107	713	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3406		1770	4952		1770	4928	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3523		1770	3406		1770	4952		1770	4928	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	496	16	165	235	79	25	1005	213	116	775	201
RTOR Reduction (vph)	0	2	0	0	39	0	0	30	0	0	39	0
Lane Group Flow (vph)	310	510	0	165	275	0	25	1188	0	116	937	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.1	19.8		12.7	16.4		1.8	32.4		6.0	36.6	
Effective Green, g (s)	16.1	19.8		12.7	16.4		1.8	32.4		6.0	36.6	
Actuated g/C Ratio	0.18	0.22		0.14	0.18		0.02	0.36		0.07	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	313	767		247	615		35	1765		117	1984	
v/s Ratio Prot	c0.18	c0.14		0.09	0.08		0.01	c0.24		c0.07	c0.19	
v/s Ratio Perm												
v/c Ratio	0.99	0.66		0.67	0.45		0.71	0.67		0.99	0.47	
Uniform Delay, d1	37.3	32.5		37.1	33.2		44.3	24.8		42.4	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	48.1	2.2		6.7	0.5		51.0	2.1		80.3	0.8	
Delay (s)	85.4	34.7		43.8	33.7		95.3	26.8		122.7	20.8	
Level of Service	F	C		D	C		F	C		F	C	
Approach Delay (s)		53.8			37.2			28.2			31.7	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			36.2			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			90.9			Sum of lost time (s)			25.0			
Intersection Capacity Utilization			68.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	20	13	10	15	31	17	1072	10	61	685	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Flt Protected	1.00	0.94		1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1754		1770	1673		1770	3534		1770	3539	1583
Satd. Flow (perm)	1770	1754		1770	1673		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	22	14	11	16	34	18	1165	11	66	745	91
RTOR Reduction (vph)	0	13	0	0	32	0	0	0	0	0	0	38
Lane Group Flow (vph)	53	23	0	11	18	0	18	1176	0	66	745	53
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	4.5	4.5		3.8	3.8		0.7	35.1		3.3	37.7	37.7
Effective Green, g (s)	4.5	4.5		3.8	3.8		0.7	35.1		3.3	37.7	37.7
Actuated g/C Ratio	0.07	0.07		0.06	0.06		0.01	0.54		0.05	0.58	0.58
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	123	122		104	98		19	1917		90	2062	922
v/s Ratio Prot	c0.03	0.01		0.01	c0.01		0.01	c0.33		c0.04	c0.21	
v/s Ratio Perm												0.03
v/c Ratio	0.43	0.19		0.11	0.18		0.95	0.61		0.73	0.36	0.06
Uniform Delay, d1	28.9	28.4		28.8	29.0		32.0	10.1		30.3	7.1	5.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.8		0.4	0.9		179.6	1.5		26.3	0.5	0.1
Delay (s)	31.3	29.1		29.3	29.9		211.6	11.6		56.5	7.6	5.9
Level of Service	C	C		C	C		F	B		E	A	A
Approach Delay (s)		30.4			29.8			14.6			11.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			14.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			64.7			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			54.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
12: W Citracado Pkwy & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	9	264	20	4	56	300	893	26	64	449	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3378	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3378	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	10	287	22	4	61	326	971	28	70	488	213
RTOR Reduction (vph)	0	0	243	0	0	55	0	2	0	0	42	0
Lane Group Flow (vph)	82	10	44	22	4	6	326	997	0	70	659	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	6.8	13.4	13.4	2.0	8.6	8.6	20.0	48.1		6.6	34.7	
Effective Green, g (s)	6.8	13.4	13.4	2.0	8.6	8.6	20.0	48.1		6.6	34.7	
Actuated g/C Ratio	0.08	0.15	0.15	0.02	0.10	0.10	0.23	0.55		0.07	0.39	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	137	283	241	40	182	155	402	1924		133	1330	
v/s Ratio Prot	c0.05	0.01		0.01	0.00		c0.18	c0.28		0.04	0.20	
v/s Ratio Perm			c0.03			0.00						
v/c Ratio	0.60	0.04	0.18	0.55	0.02	0.04	0.81	0.52		0.53	0.50	
Uniform Delay, d1	39.3	31.8	32.6	42.6	35.9	36.0	32.3	12.7		39.2	20.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.9	0.1	0.4	15.3	0.0	0.1	11.7	1.0		3.7	1.3	
Delay (s)	46.2	31.9	32.9	57.9	36.0	36.1	44.0	13.7		43.0	21.4	
Level of Service	D	C	C	E	D	D	D	B		D	C	
Approach Delay (s)		35.8			41.6			21.1			23.4	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			24.7				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			88.1				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			57.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	817	871	254	1051	0	0	0	0	333	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1456	1687	3374					1603	1603	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1456	1687	3374					1603	1603	1509
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83
Adj. Flow (vph)	0	851	907	306	1181	0	0	0	0	374	0	124
RTOR Reduction (vph)	0	0	377	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	851	530	306	1181	0	0	0	0	187	187	71
Confl. Peds. (#/hr)			7									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type		Perm		Prot						Split		custom
Protected Phases		2		1	6					4	4	4
Permitted Phases			2									4
Actuated Green, G (s)		38.4	38.4	18.0	52.8					14.8	14.8	23.2
Effective Green, g (s)		38.4	38.4	18.0	52.8					14.8	14.8	23.2
Actuated g/C Ratio		0.45	0.45	0.21	0.62					0.17	0.17	0.27
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1524	658	357	2096					279	279	412
v/s Ratio Prot		0.25		c0.18	0.35					c0.12	0.12	0.05
v/s Ratio Perm			c0.36									
v/c Ratio		0.56	0.81	0.86	0.56					0.67	0.67	0.17
Uniform Delay, d1		17.1	20.1	32.3	9.4					32.8	32.8	23.6
Progression Factor		1.00	1.00	1.19	1.06					1.00	1.00	1.00
Incremental Delay, d2		1.5	10.2	15.4	0.9					6.2	6.2	0.2
Delay (s)		18.6	30.3	53.9	10.9					39.0	39.0	23.8
Level of Service		B	C	D	B					D	D	C
Approach Delay (s)		24.6			19.7			0.0			35.2	
Approach LOS		C			B			A			D	
Intersection Summary												
HCM Average Control Delay			24.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			89.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

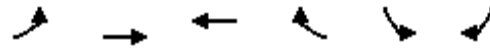
Existing PM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	980	0	0	735	405	570	5	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1485	1603	1609	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1485	1603	1609	1509			
Peak-hour factor, PHF	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86	0.92	0.92	0.92
Adj. Flow (vph)	205	1065	0	0	875	431	600	8	299	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	235	0	0	73	0	0	0
Lane Group Flow (vph)	205	1065	0	0	875	196	306	302	226	0	0	0
Confl. Peds. (#/hr)						3						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	10.6	53.4			38.6	38.6	22.0	22.0	22.0			
Effective Green, g (s)	10.6	53.4			38.6	38.6	22.0	22.0	22.0			
Actuated g/C Ratio	0.12	0.63			0.45	0.45	0.26	0.26	0.26			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	408	2120			1532	674	415	416	391			
v/s Ratio Prot	0.06	c0.32			c0.26		c0.19	0.19				
v/s Ratio Perm						0.13			0.15			
v/c Ratio	0.50	0.50			0.57	0.29	0.74	0.73	0.58			
Uniform Delay, d1	34.7	8.6			17.1	14.6	28.9	28.7	27.4			
Progression Factor	1.55	0.98			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.9	0.7			0.5	0.2	6.7	6.2	2.1			
Delay (s)	54.9	9.1			17.6	14.8	35.6	34.9	29.5			
Level of Service	D	A			B	B	D	C	C			
Approach Delay (s)		16.5			16.7			33.4			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			21.0			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			89.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	8	92	112	6	83	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	100	122	7	90	167
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	109	128	258			
Volume Left (vph)	9	0	90			
Volume Right (vph)	100	7	0			
Hadj (s)	-0.50	0.00	0.10			
Departure Headway (s)	4.3	4.4	4.4			
Degree Utilization, x	0.13	0.16	0.31			
Capacity (veh/h)	771	779	790			
Control Delay (s)	7.9	8.3	9.4			
Approach Delay (s)	7.9	8.3	9.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.8			
HCM Level of Service			A			
Intersection Capacity Utilization			32.2%	ICU Level of Service	A	
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	171	169	280	9	21	144
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	186	184	304	10	23	157
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	186	184	304	10	23	157
Volume Left (vph)	186	0	0	0	23	0
Volume Right (vph)	0	0	0	10	0	157
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	5.9	5.4	5.5	4.8	6.7	5.5
Degree Utilization, x	0.30	0.27	0.46	0.01	0.04	0.24
Capacity (veh/h)	585	643	635	715	497	601
Control Delay (s)	10.2	9.2	11.9	6.6	8.8	9.0
Approach Delay (s)	9.7		11.7		9.0	
Approach LOS	A		B		A	
Intersection Summary						
Delay			10.3			
HCM Level of Service			B			
Intersection Capacity Utilization			37.5%		ICU Level of Service	A
Analysis Period (min)			15			

Existing PM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	498	6	17	221	5	4	8	13	3	17	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Flt	1.00	1.00		1.00	1.00	0.85		0.93		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	1859		1770	1863	1583		1720		1770	1635	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	1859		1770	1863	1583		1720		1770	1635	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	541	7	18	240	5	4	9	14	3	18	79
RTOR Reduction (vph)	0	1	0	0	0	3	0	11	0	0	62	0
Lane Group Flow (vph)	143	547	0	18	240	2	0	16	0	3	35	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	8.7	28.5		1.6	21.4	39.4		18.0		18.0	18.0	
Effective Green, g (s)	8.7	28.5		1.6	21.4	39.4		18.0		18.0	18.0	
Actuated g/C Ratio	0.11	0.35		0.02	0.26	0.48		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	188	645		34	486	837		377		388	358	
v/s Ratio Prot	c0.08	c0.29		0.01	0.13	0.00		c0.01		0.00	c0.02	
v/s Ratio Perm						0.00						
v/c Ratio	0.76	0.85		0.53	0.49	0.00		0.04		0.01	0.10	
Uniform Delay, d1	35.7	24.8		39.9	25.8	11.1		25.3		25.1	25.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	16.5	13.1		14.1	3.6	0.0		0.2		0.0	0.5	
Delay (s)	52.2	37.9		54.0	29.3	11.1		25.5		25.1	26.1	
Level of Service	D	D		D	C	B		C		C	C	
Approach Delay (s)		40.9			30.7			25.5			26.1	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			36.6				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			82.1				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			45.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	56	25	255	74	18	514
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	27	277	80	20	559
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			88		709	74
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			88		709	74
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		94	43
cM capacity (veh/h)			1508		327	987
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	88	358	578			
Volume Left	0	277	20			
Volume Right	27	0	559			
cSH	1700	1508	924			
Volume to Capacity	0.05	0.18	0.63			
Queue Length 95th (ft)	0	17	114			
Control Delay (s)	0.0	6.5	15.2			
Lane LOS		A	C			
Approach Delay (s)	0.0	6.5	15.2			
Approach LOS			C			
Intersection Summary						
Average Delay		10.8				
Intersection Capacity Utilization		64.1%		ICU Level of Service		C
Analysis Period (min)		15				

Existing PM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	83	4	151	145	20	1	463	343	20	148	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1851		1770	1829		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1851		1770	1829		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	90	4	164	158	22	1	503	373	22	161	134
RTOR Reduction (vph)	0	2	0	0	6	0	0	0	174	0	0	65
Lane Group Flow (vph)	91	92	0	164	174	0	1	503	199	22	161	69
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.1	8.0		11.5	12.4		0.7	40.2	40.2	1.5	41.0	41.0
Effective Green, g (s)	7.1	8.0		11.5	12.4		0.7	40.2	40.2	1.5	41.0	41.0
Actuated g/C Ratio	0.09	0.10		0.15	0.16		0.01	0.51	0.51	0.02	0.52	0.52
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	187		257	286		16	946	803	34	964	819
v/s Ratio Prot	0.05	0.05		c0.09	c0.10		0.00	c0.27		c0.01	0.09	
v/s Ratio Perm									0.13			0.04
v/c Ratio	0.57	0.49		0.64	0.61		0.06	0.53	0.25	0.65	0.17	0.08
Uniform Delay, d1	34.6	33.7		31.9	31.1		38.9	13.2	11.0	38.6	10.1	9.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	2.0		5.1	3.6		1.6	2.1	0.7	35.3	0.4	0.2
Delay (s)	39.5	35.7		37.0	34.8		40.6	15.3	11.7	73.9	10.5	9.8
Level of Service	D	D		D	C		D	B	B	E	B	A
Approach Delay (s)		37.6			35.8			13.8			14.6	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			20.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			79.2			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			49.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX F

TRIP GENERATION COMPARISON

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PROJECT TRIP GENERATION COMPARISON
PROJECT WITHOUT CIVIC USES VS. PROJECT WITH CIVIC USES

Land Use	Size		Daily Trip Ends (ADTs)			AM Peak Hour						PM Peak Hour					
			Rate ^a	Volume	% of ADT	In:Out		Volume			% of ADT	In:Out		Volume			
						Split		In	Out	Total		Split		In	Out	Total	
Project Trip Generation without Civic Uses (Analyzed)																	
Single Family Residential	450	DU	10	DU	4500	8%	30%	70%	108	252	360	10%	70%	30%	315	135	450
Total Driveway Trips (Without Civic Uses)					4,500				108	252	360				315	135	450
Project Trip Generation with Civic Uses (Current Description)																	
Single Family Residential ^b	453	DU	10	DU	4,530	8%	30%	70%	109	253	362	10%	70%	30%	317	136	453
Retail	5	KSF	40	KSF	200	3%	60%	40%	4	2	6	9%	50%	50%	9	9	18
Primary External Trips	45%		—		90	—	—	—	4	2	6	9%	50%	50%	4	4	8
Pass-by External Trips	55%		—		(110)	—	—	—	—	—	—	9%	50%	50%	(5)	(4)	(9)
Subtotal Primary Trips (With Civic Uses) ^c					4,620				113	255	368				321	140	461
Mixed Use Reduction 10%					(462)				(11)	(26)	(37)				(32)	(14)	(46)
Wastewater Reclamation Facility ^d					10				1	1	2				1	1	2
Resident/Visitor Rooms (4) ^e			10	DU	40	6%	60%	40%	1	1	2	8%	60%	40%	2	1	3
Total Primary Trips (With Civic Uses) ^f					4,208				104	231	334				292	128	420
Total Driveway Trips (With Civic Uses) ^g					4,318				104	231	334				297	133	430

Footnotes:

- Rate is based on SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.
- With the proposed increase in units to 453 DU since the preparation of this traffic study analysis, an additional 30 ADT with 2 AM (1 inbound/ 1 outbound) and 3 PM (2 inbound/ 1 outbound) peak hour trips would be generated. With the addition of these trips, no change the conclusions of significance presented in this report would occur.
- Equals "Residential" Plus "Primary Commercial"
- The Wastewater Reclamation Facility site-specific trip generation is consistent with other projects in the area.
- The visitor rooms are civic uses reserved exclusively for residents. Nonetheless, a "hotel" rate was applied and is considered conservative.
- Equals "Primary" minus "Mixed Use Reduction"
- Equals "Total Project" minus "Mixed Use Reduction"

General Notes:

- ADT = Average daily traffic, rounded to the nearest tenth.
- DU = Dwelling Units

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APPENDIX G

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING + PROJECT

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Existing + Proj AM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	442	7	145	417	492	0	0	565	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1606	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1606	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	480	8	158	453	535	0	0	614	323
RTOR Reduction (vph)	0	0	0	0	3	110	0	0	0	0	0	189
Lane Group Flow (vph)	0	0	0	254	247	32	453	535	0	0	614	134
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				22.4	22.4	22.4	19.8	66.4			41.4	41.4
Effective Green, g (s)				22.4	22.4	22.4	19.8	66.4			41.4	41.4
Actuated g/C Ratio				0.22	0.22	0.22	0.20	0.66			0.41	0.41
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				377	360	337	680	2350			2105	655
v/s Ratio Prot				0.15	c0.15		c0.13	0.15			c0.12	
v/s Ratio Perm						0.02						0.08
v/c Ratio				0.67	0.69	0.09	0.67	0.23			0.29	0.20
Uniform Delay, d1				35.5	35.6	30.8	37.0	6.7			19.5	18.8
Progression Factor				1.00	1.00	1.00	0.70	0.52			1.00	1.00
Incremental Delay, d2				4.7	5.3	0.1	2.2	0.2			0.4	0.7
Delay (s)				40.2	40.9	30.9	28.0	3.6			19.9	19.5
Level of Service				D	D	C	C	A			B	B
Approach Delay (s)		0.0			38.4			14.8			19.7	
Approach LOS		A			D			B			B	
Intersection Summary												
HCM Average Control Delay			22.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			60.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj AM
2: SR 78 EB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	137	687	0	0	0	0	661	414	189	818	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Frt	1.00	0.91	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1531	1504					3539	2787	3433	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1531	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	270	149	747	0	0	0	0	718	450	205	889	0
RTOR Reduction (vph)	0	56	56	0	0	0	0	0	278	0	0	0
Lane Group Flow (vph)	243	419	392	0	0	0	0	718	172	205	889	0
Turn Type	Split		Perm						Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	35.1	35.1	35.1					38.2	38.2	10.3	53.8	
Effective Green, g (s)	35.1	35.1	35.1					38.2	38.2	10.3	53.8	
Actuated g/C Ratio	0.35	0.35	0.35					0.38	0.38	0.10	0.54	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	590	537	528					1352	1065	354	1904	
v/s Ratio Prot	0.14	c0.27						c0.20		0.06	c0.25	
v/s Ratio Perm			0.26						0.06			
v/c Ratio	0.41	0.78	0.74					0.53	0.16	0.58	0.47	
Uniform Delay, d1	24.6	29.0	28.5					24.0	20.4	42.8	14.3	
Progression Factor	1.00	1.00	1.00					0.57	0.91	1.11	0.38	
Incremental Delay, d2	0.5	7.2	5.6					1.4	0.3	2.2	0.8	
Delay (s)	25.1	36.3	34.1					15.0	18.8	49.5	6.2	
Level of Service	C	D	C					B	B	D	A	
Approach Delay (s)		33.1			0.0			16.5			14.3	
Approach LOS		C			A			B			B	
Intersection Summary												
HCM Average Control Delay			21.4									
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			60.2%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj AM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	294	168	63	339	205	207	603	30	364	774	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Flt Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	0.96
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4902	4902
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4902	4902
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	320	183	68	368	223	225	655	33	396	841	266
RTOR Reduction (vph)	0	0	134	0	0	182	0	0	17	0	51	0
Lane Group Flow (vph)	283	320	49	68	368	41	225	655	16	396	1056	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.5	26.7	26.7	4.0	18.2	18.2	11.0	33.8	33.8	15.5	38.3	38.3
Effective Green, g (s)	13.5	26.7	26.7	4.0	18.2	18.2	11.0	33.8	33.8	15.5	38.3	38.3
Actuated g/C Ratio	0.14	0.27	0.27	0.04	0.18	0.18	0.11	0.34	0.34	0.16	0.38	0.38
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	463	945	423	137	644	288	378	1719	535	532	1877	1877
v/s Ratio Prot	c0.08	0.09		0.02	c0.10		c0.07	0.13		c0.12	c0.22	
v/s Ratio Perm			0.03			0.03			0.01			
v/c Ratio	0.61	0.34	0.12	0.50	0.57	0.14	0.60	0.38	0.03	0.74	0.56	0.56
Uniform Delay, d1	40.8	29.5	27.7	47.0	37.3	34.3	42.4	25.2	22.1	40.4	24.3	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.81	0.81
Incremental Delay, d2	2.4	0.2	0.1	2.8	1.2	0.2	2.5	0.6	0.1	4.7	1.0	1.0
Delay (s)	43.2	29.7	27.8	49.8	38.6	34.6	44.9	25.8	22.2	53.5	20.7	20.7
Level of Service	D	C	C	D	D	C	D	C	C	D	C	C
Approach Delay (s)		34.1			38.4			30.4			29.4	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			32.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			59.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj AM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	0	19	0	0	0	83	533	1	64	902	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0				4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00	0.95	
Frt	1.00		0.85				1.00	1.00		1.00	0.98	
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770		1583				1770	3538		1770	3452	
Flt Permitted	0.76		1.00				0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1410		1583				1770	3538		1770	3452	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	273	0	21	0	0	0	90	579	1	70	980	193
RTOR Reduction (vph)	0	0	16	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	273	0	5	0	0	0	90	580	0	70	1157	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	20.2		20.2				7.2	42.1		6.5	41.4	
Effective Green, g (s)	20.2		20.2				7.2	42.1		6.5	41.4	
Actuated g/C Ratio	0.25		0.25				0.09	0.52		0.08	0.51	
Clearance Time (s)	4.0		4.0				4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0		3.0				3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	353		396				158	1843		142	1769	
v/s Ratio Prot							c0.05	0.16		0.04	c0.34	
v/s Ratio Perm	c0.19		0.00									
v/c Ratio	0.77		0.01				0.57	0.31		0.49	0.65	
Uniform Delay, d1	28.2		22.8				35.3	11.1		35.6	14.5	
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.1		0.0				4.7	0.4		2.7	1.9	
Delay (s)	38.3		22.8				40.0	11.5		38.3	16.4	
Level of Service	D		C				D	B		D	B	
Approach Delay (s)		37.2			0.0			15.4			17.6	
Approach LOS		D			A			B			B	
Intersection Summary												
HCM Average Control Delay			19.5				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			80.8				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			59.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	129	113	160	340	139	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	140	123	174	370	151	196
RTOR Reduction (vph)	0	105	0	0	0	81
Lane Group Flow (vph)	140	18	174	370	151	115
Turn Type	Perm		Prot		pm+ov	
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	7.7	7.7	11.0	23.2	19.1	30.1
Effective Green, g (s)	7.7	7.7	11.0	23.2	19.1	30.1
Actuated g/C Ratio	0.15	0.15	0.21	0.45	0.37	0.59
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	238	380	843	659	1068
v/s Ratio Prot	0.08		0.10	c0.20	c0.09	0.02
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.50	0.08	0.46	0.44	0.23	0.11
Uniform Delay, d1	20.0	18.7	17.6	9.6	11.0	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	0.9	0.4	0.8	0.0
Delay (s)	21.4	18.9	18.4	10.0	11.9	4.7
Level of Service	C	B	B	A	B	A
Approach Delay (s)	20.2			12.7	7.8	
Approach LOS	C			B	A	
Intersection Summary						
HCM Average Control Delay			12.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.34			
Actuated Cycle Length (s)			51.3		Sum of lost time (s)	9.0
Intersection Capacity Utilization			34.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing + Proj AM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	10	0	0	226	8	190	82	0	361	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	0	0	246	9	207	89	0	392	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	759	705	196	431	616	103	392			296		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	759	705	196	431	616	103	392			296		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	74	99			100		
cM capacity (veh/h)	216	357	812	499	401	932	1163			1263		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	11	246	9	103	103	89	262	131				
Volume Left	0	0	9	0	0	0	0	0				
Volume Right	11	246	0	0	0	89	0	0				
cSH	812	932	1163	1700	1700	1700	1700	1700				
Volume to Capacity	0.01	0.26	0.01	0.06	0.06	0.05	0.15	0.08				
Queue Length 95th (ft)	1	27	1	0	0	0	0	0				
Control Delay (s)	9.5	10.2	8.1	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.5	10.2	0.2	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			25.9%	ICU Level of Service				A				
Analysis Period (min)			15									

Existing+Project AM
7: I-15 NB Ramps & Valley Pkwy

Harmony Grove Parcel

1/30/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	336	758	0	0	778	177	317	3	341	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1556		1775	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1556		1775	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	365	824	0	0	846	192	345	3	371	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	130	0	0	82	0	0	0
Lane Group Flow (vph)	365	824	0	0	846	62	0	348	289	0	0	0
Confl. Peds. (#/hr)			2			3	6					
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	16.4	54.5			33.9	33.9		40.4	40.4			
Effective Green, g (s)	16.4	54.5			33.9	33.9		40.4	40.4			
Actuated g/C Ratio	0.16	0.52			0.32	0.32		0.38	0.38			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	536	2639			1641	502		682	609			
v/s Ratio Prot	c0.11	0.16			c0.17			c0.20				
v/s Ratio Perm						0.04			0.18			
v/c Ratio	0.68	0.31			0.52	0.12		0.51	0.47			
Uniform Delay, d1	41.8	14.5			28.9	25.1		24.7	24.3			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	3.6	0.3			1.2	0.5		2.7	2.6			
Delay (s)	45.4	14.8			30.0	25.6		27.4	27.0			
Level of Service	D	B			C	C		C	C			
Approach Delay (s)		24.2			29.2			27.2			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM 2000 Control Delay		26.7			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		105.0			Sum of lost time (s)			14.3				
Intersection Capacity Utilization		54.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Existing+Project AM
8: Shopping Ctr Dwy/I-15 SB Ramps & Valley Pkwy

Harmony Grove Parcel

1/30/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	791	78	103	834	158	37	42	90	213	101	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	3433	5085	1560	3433	6017	1258	1770	1863	1583		3179	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	3433	5085	1560	3433	6017	1258	1770	1863	1583		3179	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	860	85	112	907	172	40	46	98	232	110	504
RTOR Reduction (vph)	0	0	52	0	2	94	0	0	87	0	276	0
Lane Group Flow (vph)	110	860	33	112	922	61	40	46	11	0	570	0
Confl. Peds. (#/hr)			2			5						
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	8.9	42.1	42.1	10.3	43.5	43.5	12.0	12.0	12.0		26.7	
Effective Green, g (s)	8.9	42.1	42.1	10.3	43.5	43.5	12.0	12.0	12.0		26.7	
Actuated g/C Ratio	0.08	0.38	0.38	0.09	0.40	0.40	0.11	0.11	0.11		0.24	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	277	1946	597	321	2379	497	193	203	172		771	
v/s Ratio Prot	0.03	c0.17		c0.03	0.15		0.02	c0.02			c0.18	
v/s Ratio Perm			0.02			0.05			0.01			
v/c Ratio	0.40	0.44	0.05	0.35	0.39	0.12	0.21	0.23	0.06		0.74	
Uniform Delay, d1	48.0	25.2	21.4	46.7	23.7	21.1	44.7	44.8	44.0		38.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.9	0.7	0.2	0.7	0.1	0.1	0.5	0.6	0.2		3.7	
Delay (s)	48.9	26.0	21.6	47.4	23.8	21.2	45.2	45.3	44.1		42.2	
Level of Service	D	C	C	D	C	C	D	D	D		D	
Approach Delay (s)		28.0			25.7			44.6			42.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			31.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			72.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	368	320	75	584	31	229	708	39	98	857	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.93		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3292		3433	3512		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3292		3433	3512		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	195	400	348	82	635	34	249	770	42	107	932	609
RTOR Reduction (vph)	0	149	0	0	4	0	0	0	28	0	0	14
Lane Group Flow (vph)	195	599	0	82	665	0	249	770	14	107	932	595
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	15.1	33.1		3.9	21.9		9.8	31.3	31.3	5.4	24.9	40.0
Effective Green, g (s)	15.1	33.1		3.9	21.9		9.8	31.3	31.3	5.4	24.9	40.0
Actuated g/C Ratio	0.16	0.36		0.04	0.24		0.11	0.34	0.34	0.06	0.27	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	565	1188		146	839		367	1736	540	202	1381	777
v/s Ratio Prot	0.06	0.18		0.02	c0.19		c0.07	0.15		0.03	0.18	c0.13
v/s Ratio Perm									0.01			0.25
v/c Ratio	0.35	0.50		0.56	0.79		0.68	0.44	0.03	0.53	0.67	0.77
Uniform Delay, d1	33.9	22.9		43.1	32.8		39.4	23.4	20.1	41.9	29.8	21.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3		4.9	5.2		4.9	0.8	0.1	2.5	2.7	4.5
Delay (s)	34.3	23.2		47.9	38.0		44.4	24.3	20.2	44.4	32.4	26.4
Level of Service	C	C		D	D		D	C	C	D	C	C
Approach Delay (s)		25.5			39.0			28.8			31.0	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			30.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			91.7			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			70.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	198	12	122	271	146	7	635	141	93	1083	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3509		1770	3353		1770	4947		1770	4938	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3509		1770	3353		1770	4947		1770	4938	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	180	215	13	133	295	159	8	690	153	101	1177	282
RTOR Reduction (vph)	0	5	0	0	83	0	0	31	0	0	33	0
Lane Group Flow (vph)	180	223	0	133	371	0	8	812	0	101	1426	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.2	18.2		10.2	16.2		0.7	34.5		7.8	41.6	
Effective Green, g (s)	12.2	18.2		10.2	16.2		0.7	34.5		7.8	41.6	
Actuated g/C Ratio	0.13	0.20		0.11	0.18		0.01	0.38		0.09	0.46	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	238	704		199	599		14	1882		152	2265	
v/s Ratio Prot	c0.10	0.06		0.08	c0.11		0.00	0.16		c0.06	c0.29	
v/s Ratio Perm												
v/c Ratio	0.76	0.32		0.67	0.62		0.57	0.43		0.66	0.63	
Uniform Delay, d1	37.8	30.9		38.6	34.4		44.9	20.8		40.2	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.8	0.3		8.2	1.9		46.0	0.7		10.4	1.3	
Delay (s)	50.6	31.2		46.8	36.3		90.8	21.6		50.6	20.0	
Level of Service	D	C		D	D		F	C		D	C	
Approach Delay (s)		39.8			38.7			22.2			22.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			27.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			90.7			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			68.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	19	24	14	42	49	20	695	6	25	1012	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.92		1.00	0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1708		1770	1713		1770	3534		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1708		1770	1713		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	21	26	15	46	53	22	755	7	27	1100	51
RTOR Reduction (vph)	0	23	0	0	48	0	0	1	0	0	0	25
Lane Group Flow (vph)	68	24	0	15	51	0	22	761	0	27	1100	26
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.3	6.3		6.0	6.0		0.7	31.2		1.9	32.4	32.4
Effective Green, g (s)	6.3	6.3		6.0	6.0		0.7	31.2		1.9	32.4	32.4
Actuated g/C Ratio	0.10	0.10		0.09	0.09		0.01	0.49		0.03	0.51	0.51
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	176	170		168	162		20	1739		53	1809	809
v/s Ratio Prot	c0.04	0.01		0.01	c0.03		0.01	0.22		c0.02	c0.31	
v/s Ratio Perm												0.02
v/c Ratio	0.39	0.14		0.09	0.31		1.10	0.44		0.51	0.61	0.03
Uniform Delay, d1	26.7	26.1		26.2	26.8		31.3	10.4		30.3	11.0	7.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.4		0.2	1.1		234.8	0.8		7.5	1.5	0.1
Delay (s)	28.1	26.4		26.4	27.9		266.1	11.2		37.8	12.5	7.8
Level of Service	C	C		C	C		F	B		D	B	A
Approach Delay (s)		27.5			27.7			18.4			12.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.4			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			63.4			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			45.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj AM
12: W Citracado Pkwy & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	9	388	80	11	46	308	283	38	123	926	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3477		1770	3513	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3477		1770	3513	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	10	422	87	12	50	335	308	41	134	1007	53
RTOR Reduction (vph)	0	0	310	0	0	46	0	9	0	0	4	0
Lane Group Flow (vph)	143	10	112	87	12	4	335	340	0	134	1056	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	10.2	12.1	12.1	5.7	7.6	7.6	20.1	39.9		11.7	31.5	
Effective Green, g (s)	10.2	12.1	12.1	5.7	7.6	7.6	20.1	39.9		11.7	31.5	
Actuated g/C Ratio	0.12	0.14	0.14	0.07	0.09	0.09	0.23	0.46		0.13	0.36	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	207	258	219	115	162	138	407	1587		237	1266	
v/s Ratio Prot	c0.08	0.01		0.05	0.01		c0.19	0.10		0.08	c0.30	
v/s Ratio Perm			c0.07			0.00						
v/c Ratio	0.69	0.04	0.51	0.76	0.07	0.03	0.82	0.21		0.57	0.83	
Uniform Delay, d1	37.1	32.6	34.9	40.2	36.7	36.5	32.0	14.3		35.5	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	0.1	2.0	24.3	0.2	0.1	12.6	0.1		3.1	4.9	
Delay (s)	46.6	32.7	36.9	64.5	36.9	36.6	44.6	14.4		38.5	30.5	
Level of Service	D	C	D	E	D	D	D	B		D	C	
Approach Delay (s)		39.3			52.9			29.2			31.4	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			33.8				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			87.4				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			69.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj AM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	557	661	121	1172	0	0	0	0	155	7	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		3374	1467	1687	3374					1603	1615	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		3374	1467	1687	3374					1603	1615	1509
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	714	703	175	1363	0	0	0	0	199	12	96
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	714	703	175	1363	0	0	0	0	105	106	60
Confl. Peds. (#/hr)			11									
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type		Perm		Prot						Split	custom	
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									4
Actuated Green, G (s)		46.5	46.5	13.3	55.8					11.4	11.4	20.2
Effective Green, g (s)		46.5	46.5	13.3	55.8					11.4	11.4	20.2
Actuated g/C Ratio		0.55	0.55	0.16	0.66					0.13	0.13	0.24
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1846	803	264	2215					215	217	359
v/s Ratio Prot		0.21		c0.10	0.40					0.07	c0.07	0.04
v/s Ratio Perm			c0.48									
v/c Ratio		0.39	0.88	0.66	0.62					0.49	0.49	0.17
Uniform Delay, d1		11.1	16.7	33.7	8.4					34.1	34.1	25.7
Progression Factor		1.00	1.00	1.11	1.11					1.00	1.00	1.00
Incremental Delay, d2		0.6	12.8	5.4	1.0					1.7	1.7	0.2
Delay (s)		11.7	29.6	42.7	10.4					35.8	35.8	25.9
Level of Service		B	C	D	B					D	D	C
Approach Delay (s)		20.5			14.1			0.0			32.7	
Approach LOS		C			B			A			C	
Intersection Summary												
HCM Average Control Delay			18.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			92.0%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

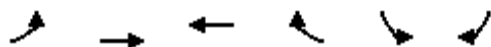
Existing + Proj AM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	600	0	0	635	303	658	1	178	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	137	750	0	0	722	344	793	4	241	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	201	0	0	116	0	0	0
Lane Group Flow (vph)	137	750	0	0	722	143	396	401	125	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	8.9	48.5			35.4	35.4	26.9	26.9	26.9			
Effective Green, g (s)	8.9	48.5			35.4	35.4	26.9	26.9	26.9			
Actuated g/C Ratio	0.10	0.57			0.42	0.42	0.32	0.32	0.32			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	343	1925			1405	615	507	509	478			
v/s Ratio Prot	0.04	c0.22			c0.21		0.25	c0.25				
v/s Ratio Perm						0.10			0.08			
v/c Ratio	0.40	0.39			0.51	0.23	0.78	0.79	0.26			
Uniform Delay, d1	35.6	10.1			18.4	16.0	26.4	26.5	21.6			
Progression Factor	1.63	0.80			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.6			0.3	0.2	7.7	7.9	0.3			
Delay (s)	58.8	8.6			18.7	16.2	34.0	34.4	21.9			
Level of Service	E	A			B	B	C	C	C			
Approach Delay (s)		16.4			17.9			31.4			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			22.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			92.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	8	77	173	15	72	123
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	84	188	16	78	134
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	92	204	212			
Volume Left (vph)	9	0	78			
Volume Right (vph)	84	16	0			
Hadj (s)	-0.49	-0.01	0.11			
Departure Headway (s)	4.3	4.3	4.4			
Degree Utilization, x	0.11	0.25	0.26			
Capacity (veh/h)	755	805	782			
Control Delay (s)	7.9	8.7	9.0			
Approach Delay (s)	7.9	8.7	9.0			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.7			
HCM Level of Service			A			
Intersection Capacity Utilization			35.7%	ICU Level of Service	A	
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	168	214	144	16	6	176
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	183	233	157	17	7	191
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	183	233	157	17	7	191
Volume Left (vph)	183	0	0	0	7	0
Volume Right (vph)	0	0	0	17	0	191
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	5.8	5.3	5.6	4.8	6.4	5.2
Degree Utilization, x	0.29	0.34	0.24	0.02	0.01	0.28
Capacity (veh/h)	598	660	617	698	521	638
Control Delay (s)	10.0	9.8	9.1	6.8	8.3	9.1
Approach Delay (s)	9.9		8.9		9.0	
Approach LOS	A		A		A	
Intersection Summary						
Delay			9.4			
HCM Level of Service			A			
Intersection Capacity Utilization			30.2%		ICU Level of Service	A
Analysis Period (min)			15			

Existing + Proj AM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	202	12	84	383	2	26	66	197	2	31	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1770	1847		1770	1863	1583		1684		1770	1639	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1770	1847		1770	1863	1583		1684		1770	1639	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	220	13	91	416	2	28	72	214	2	34	138
RTOR Reduction (vph)	0	3	0	0	0	1	0	96	0	0	107	0
Lane Group Flow (vph)	52	230	0	91	416	1	0	218	0	2	65	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	3.2	24.8		4.0	25.6	43.6		18.0		18.0	18.0	
Effective Green, g (s)	3.2	24.8		4.0	25.6	43.6		18.0		18.0	18.0	
Actuated g/C Ratio	0.04	0.31		0.05	0.32	0.54		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	70	567		88	590	933		375		394	365	
v/s Ratio Prot	0.03	0.12		c0.05	c0.22	0.00		c0.13		0.00	c0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.74	0.41		1.03	0.71	0.00		0.58		0.01	0.18	
Uniform Delay, d1	38.4	22.2		38.4	24.3	8.6		28.0		24.4	25.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	34.2	2.2		105.5	6.9	0.0		6.4		0.0	1.1	
Delay (s)	72.6	24.3		143.9	31.2	8.6		34.4		24.5	26.5	
Level of Service	E	C		F	C	A		C		C	C	
Approach Delay (s)		33.1			51.3			34.4			26.4	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			39.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			80.8			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			63.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	68	15	435	38	22	299
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	16	473	41	24	325
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			90		1069	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			90		1069	82
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			69		86	67
cM capacity (veh/h)			1505		168	978
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	90	514	349			
Volume Left	0	473	24			
Volume Right	16	0	325			
cSH	1700	1505	735			
Volume to Capacity	0.05	0.31	0.47			
Queue Length 95th (ft)	0	34	64			
Control Delay (s)	0.0	8.0	14.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	8.0	14.2			
Approach LOS			B			
Intersection Summary						
Average Delay			9.5			
Intersection Capacity Utilization			59.1%	ICU Level of Service	B	
Analysis Period (min)			15			

Existing + Proj AM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	111	1	319	70	40	2	230	234	10	366	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1860		1770	1762		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1860		1770	1762		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	121	1	347	76	43	2	250	254	11	398	79
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	155	0	0	48
Lane Group Flow (vph)	101	122	0	347	95	0	2	250	99	11	398	31
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.4	8.3		18.2	19.1		0.6	28.8	28.8	0.6	28.8	28.8
Effective Green, g (s)	7.4	8.3		18.2	19.1		0.6	28.8	28.8	0.6	28.8	28.8
Actuated g/C Ratio	0.10	0.11		0.25	0.26		0.01	0.39	0.39	0.01	0.39	0.39
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	177	209		436	455		14	726	617	14	726	617
v/s Ratio Prot	0.06	c0.07		c0.20	0.05		0.00	0.13		c0.01	c0.21	
v/s Ratio Perm									0.06			0.02
v/c Ratio	0.57	0.58		0.80	0.21		0.14	0.34	0.16	0.79	0.55	0.05
Uniform Delay, d1	31.7	31.2		26.1	21.5		36.4	15.9	14.7	36.6	17.5	14.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	4.1		9.7	0.2		4.7	1.3	0.6	130.6	3.0	0.2
Delay (s)	36.1	35.3		35.8	21.7		41.1	17.2	15.2	167.2	20.5	14.2
Level of Service	D	D		D	C		D	B	B	F	C	B
Approach Delay (s)		35.7			32.2			16.3			22.8	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM Average Control Delay			25.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			73.9			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			51.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	485	5	248	522	890	0	0	740	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1600	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1600	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	527	5	270	567	967	0	0	804	378
RTOR Reduction (vph)	0	0	0	0	5	76	0	0	0	0	0	234
Lane Group Flow (vph)	0	0	0	279	275	167	567	967	0	0	804	144
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				24.9	24.9	24.9	20.5	63.9			38.2	38.2
Effective Green, g (s)				24.9	24.9	24.9	20.5	63.9			38.2	38.2
Actuated g/C Ratio				0.25	0.25	0.25	0.20	0.64			0.38	0.38
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				419	398	374	704	2261			1942	605
v/s Ratio Prot				0.17	c0.17		c0.17	c0.27			0.16	
v/s Ratio Perm						0.11						0.09
v/c Ratio				0.67	0.69	0.45	0.81	0.43			0.41	0.24
Uniform Delay, d1				33.8	34.1	31.7	37.9	9.0			22.7	21.0
Progression Factor				1.00	1.00	1.00	1.40	0.13			1.00	1.00
Incremental Delay, d2				4.0	5.1	0.9	4.2	0.4			0.7	0.9
Delay (s)				37.8	39.2	32.6	57.1	1.6			23.3	21.9
Level of Service				D	D	C	E	A			C	C
Approach Delay (s)		0.0			36.7			22.1			22.9	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM Average Control Delay			25.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			10.8			
Intersection Capacity Utilization			69.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
2: SR 78 EB Ramps &

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	343	56	518	0	0	0	0	1069	525	366	859	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Flt Protected	1.00	0.89	0.85					1.00	0.85	1.00	1.00	
Flt Permitted	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1507	1504					3539	2787	3433	3539	
Satd. Flow (perm)	1681	1507	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	373	61	563	0	0	0	0	1162	571	398	934	0
RTOR Reduction (vph)	0	87	87	0	0	0	0	0	338	0	0	0
Lane Group Flow (vph)	336	247	240	0	0	0	0	1162	233	398	934	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	27.3	27.3	27.3					39.5	39.5	16.8	61.5	
Effective Green, g (s)	27.3	27.3	27.3					39.5	39.5	16.8	61.5	
Actuated g/C Ratio	0.27	0.27	0.27					0.40	0.40	0.17	0.62	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	459	411	411					1398	1101	577	2176	
v/s Ratio Prot	c0.20	0.16						c0.33		c0.12	0.26	
v/s Ratio Perm			0.16						0.08			
v/c Ratio	0.73	0.60	0.59					0.83	0.21	0.69	0.43	
Uniform Delay, d1	33.0	31.6	31.5					27.2	20.0	39.1	10.1	
Progression Factor	1.00	1.00	1.00					0.48	0.11	1.02	1.14	
Incremental Delay, d2	5.9	2.5	2.1					4.5	0.3	3.1	0.6	
Delay (s)	39.0	34.1	33.6					17.5	2.6	43.2	12.1	
Level of Service	D	C	C					B	A	D	B	
Approach Delay (s)		35.6			0.0			12.6			21.4	
Approach LOS		D			A			B			C	
Intersection Summary												
HCM Average Control Delay			21.1									
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			69.9%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	311	485	183	37	362	438	330	940	44	172	563	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	0.94
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4789	4789
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4789	4789
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	527	199	40	393	476	359	1022	48	187	612	389
RTOR Reduction (vph)	0	0	141	0	0	214	0	0	17	0	115	0
Lane Group Flow (vph)	338	527	58	40	393	262	359	1022	31	187	886	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.2	29.3	29.3	8.2	22.3	22.3	12.5	32.5	32.5	10.0	30.0	30.0
Effective Green, g (s)	15.2	29.3	29.3	8.2	22.3	22.3	12.5	32.5	32.5	10.0	30.0	30.0
Actuated g/C Ratio	0.15	0.29	0.29	0.08	0.22	0.22	0.12	0.32	0.32	0.10	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	522	1037	464	282	789	353	429	1653	514	343	1437	1437
v/s Ratio Prot	c0.10	0.15		0.01	0.11		c0.10	c0.20		0.05	c0.19	
v/s Ratio Perm			0.04			c0.17			0.02			
v/c Ratio	0.65	0.51	0.13	0.14	0.50	0.74	0.84	0.62	0.06	0.55	0.62	0.62
Uniform Delay, d1	39.9	29.4	25.9	42.6	34.0	36.2	42.8	28.5	23.2	42.8	30.1	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.79	0.79
Incremental Delay, d2	2.8	0.4	0.1	0.2	0.5	8.2	13.3	1.7	0.2	1.6	1.8	1.8
Delay (s)	42.6	29.8	26.1	42.9	34.5	44.4	56.0	30.3	23.5	39.3	25.4	25.4
Level of Service	D	C	C	D	C	D	E	C	C	D	C	C
Approach Delay (s)		33.2			40.0			36.5			27.6	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM Average Control Delay			34.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			66.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	254	0	38	0	0	1	68	918	1	80	654	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	
Frt	1.00		0.85		0.85		1.00	1.00		1.00	0.95	
Flt Protected	0.95		1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770		1583		1583		1770	3539		1770	3376	
Flt Permitted	0.76		1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1410		1583		1583		1770	3539		1770	3376	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	276	0	41	0	0	1	74	998	1	87	711	315
RTOR Reduction (vph)	0	0	31	0	1	0	0	0	0	0	48	0
Lane Group Flow (vph)	276	0	10	0	0	0	74	999	0	87	978	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	20.3		20.3		20.3		6.5	41.5		7.1	42.1	
Effective Green, g (s)	20.3		20.3		20.3		6.5	41.5		7.1	42.1	
Actuated g/C Ratio	0.25		0.25		0.25		0.08	0.51		0.09	0.52	
Clearance Time (s)	4.0		4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354		397		397		142	1815		155	1757	
v/s Ratio Prot					0.00		0.04	0.28		c0.05	c0.29	
v/s Ratio Perm	c0.20		0.01									
v/c Ratio	0.78		0.03		0.00		0.52	0.55		0.56	0.56	
Uniform Delay, d1	28.2		22.8		22.7		35.7	13.4		35.4	13.1	
Progression Factor	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.4		0.0		0.0		3.4	1.2		4.6	1.3	
Delay (s)	38.6		22.9		22.7		39.1	14.6		40.0	14.4	
Level of Service	D		C		C		D	B		D	B	
Approach Delay (s)		36.6			22.7			16.3			16.4	
Approach LOS		D			C			B			B	
Intersection Summary												
HCM Average Control Delay			18.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			80.9				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			61.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	287	190	249	160	133	468
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	207	271	174	145	509
RTOR Reduction (vph)	0	154	0	0	0	135
Lane Group Flow (vph)	312	53	271	174	145	374
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	14.9	14.9	13.2	32.6	16.5	29.7
Effective Green, g (s)	14.9	14.9	13.2	32.6	16.5	29.7
Actuated g/C Ratio	0.26	0.26	0.23	0.56	0.28	0.51
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	478	406	402	1045	503	932
v/s Ratio Prot	c0.17		c0.15	0.09	0.08	c0.09
v/s Ratio Perm		0.03				0.15
v/c Ratio	0.65	0.13	0.67	0.17	0.29	0.40
Uniform Delay, d1	19.3	16.6	20.5	6.2	16.2	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1	4.4	0.1	1.4	0.3
Delay (s)	22.5	16.8	24.9	6.2	17.7	9.0
Level of Service	C	B	C	A	B	A
Approach Delay (s)	20.2			17.6	10.9	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			15.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			58.1		Sum of lost time (s)	13.5
Intersection Capacity Utilization			51.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing + Proj PM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Volume (veh/h)	0	0	1	0	0	154	19	279	61	0	412	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1	0	0	167	21	303	66	0	448	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	808	859	224	570	792	152	448			370		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	808	859	224	570	792	152	448			370		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	81	98			100		
cM capacity (veh/h)	217	287	779	398	314	867	1109			1186		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	1	167	21	152	152	66	299	149				
Volume Left	0	0	21	0	0	0	0	0				
Volume Right	1	167	0	0	0	66	0	0				
cSH	779	867	1109	1700	1700	1700	1700	1700				
Volume to Capacity	0.00	0.19	0.02	0.09	0.09	0.04	0.18	0.09				
Queue Length 95th (ft)	0	18	1	0	0	0	0	0				
Control Delay (s)	9.6	10.1	8.3	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.6	10.1	0.4	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			23.9%	ICU Level of Service					A			
Analysis Period (min)			15									

Existing+Project PM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	782	899	0	0	1038	275	251	1	298	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1550		1774	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1550		1774	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	850	977	0	0	1128	299	273	1	324	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	228	0	0	72	0	0	0
Lane Group Flow (vph)	850	977	0	0	1128	71	0	274	252	0	0	0
Confl. Peds. (#/hr)						5	10					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	29.9	58.9			24.8	24.8		36.0	36.0			
Effective Green, g (s)	29.9	58.9			24.8	24.8		36.0	36.0			
Actuated g/C Ratio	0.28	0.56			0.24	0.24		0.34	0.34			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	978	2852			1201	366		608	543			
v/s Ratio Prot	c0.25	0.19			c0.22			0.15				
v/s Ratio Perm						0.05			c0.16			
v/c Ratio	0.87	0.34			0.94	0.19		0.45	0.46			
Uniform Delay, d1	35.7	12.5			39.4	32.1		26.8	27.0			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	8.3	0.3			15.0	1.2		2.4	2.8			
Delay (s)	44.0	12.9			54.3	33.3		29.2	29.8			
Level of Service	D	B			D	C		C	C			
Approach Delay (s)		27.3			49.9			29.5			0.0	
Approach LOS		C			D			C			A	
Intersection Summary												
HCM Average Control Delay			36.0			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			68.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Project PM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	1213	78	160	799	330	43	36	243	225	123	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85		0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1549	3433	5910	1282	1770	1863	1560		3190	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1549	3433	5910	1282	1770	1863	1560		3190	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	1318	85	174	868	359	47	39	264	245	134	362
RTOR Reduction (vph)	0	0	53	0	22	132	0	0	233	0	181	0
Lane Group Flow (vph)	104	1318	32	174	986	87	47	39	31	0	560	0
Confl. Peds. (#/hr)			8						1			2
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	8.1	40.8	40.8	11.0	43.7	43.7	12.8	12.8	12.8		26.5	
Effective Green, g (s)	8.1	40.8	40.8	11.0	43.7	43.7	12.8	12.8	12.8		26.5	
Actuated g/C Ratio	0.07	0.37	0.37	0.10	0.40	0.40	0.12	0.12	0.12		0.24	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	253	1886	575	343	2348	509	206	217	182		769	
v/s Ratio Prot	0.03	c0.26		c0.05	c0.17		c0.03	0.02			c0.18	
v/s Ratio Perm			0.02			0.07			0.02			
v/c Ratio	0.41	0.70	0.06	0.51	0.42	0.17	0.23	0.18	0.17		0.73	
Uniform Delay, d1	48.7	29.4	22.2	46.9	24.0	21.4	44.1	43.9	43.8		38.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.1	2.2	0.2	1.2	0.1	0.2	0.6	0.4	0.4		3.5	
Delay (s)	49.8	31.6	22.4	48.1	24.1	21.6	44.7	44.3	44.2		41.9	
Level of Service	D	C	C	D	C	C	D	D	D		D	
Approach Delay (s)		32.3			26.7			44.3			41.9	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			33.2			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			24.4			
Intersection Capacity Utilization			79.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
9: Auto Park Way & W. Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	416	718	215	117	332	168	246	941	51	189	747	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3417		3433	3361		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3417		3433	3361		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	452	780	234	127	361	183	267	1023	55	205	812	255
RTOR Reduction (vph)	0	36	0	0	80	0	0	0	39	0	0	63
Lane Group Flow (vph)	452	978	0	127	464	0	267	1023	16	205	812	192
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	13.4	26.7		4.0	17.3		8.0	23.0	23.0	5.0	20.0	33.4
Effective Green, g (s)	13.4	26.7		4.0	17.3		8.0	23.0	23.0	5.0	20.0	33.4
Actuated g/C Ratio	0.17	0.34		0.05	0.22		0.10	0.29	0.29	0.06	0.25	0.42
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	585	1159		174	739		349	1486	463	218	1292	772
v/s Ratio Prot	c0.13	c0.29		0.04	0.14		c0.08	c0.20		0.06	0.16	0.04
v/s Ratio Perm									0.01			0.08
v/c Ratio	0.77	0.84		0.73	0.63		0.77	0.69	0.03	0.94	0.63	0.25
Uniform Delay, d1	31.2	24.1		36.8	27.8		34.4	24.7	19.9	36.7	26.1	14.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	5.8		14.2	1.7		9.6	2.6	0.1	44.4	2.3	0.2
Delay (s)	37.5	29.9		51.0	29.5		44.0	27.3	20.1	81.1	28.4	14.7
Level of Service	D	C		D	C		D	C	C	F	C	B
Approach Delay (s)		32.2			33.5			30.3			34.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			32.4			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			78.7			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			70.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	457	15	168	219	73	23	956	203	107	785	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3407		1770	4952		1770	4936	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3523		1770	3407		1770	4952		1770	4936	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	497	16	183	238	79	25	1039	221	116	853	208
RTOR Reduction (vph)	0	2	0	0	38	0	0	30	0	0	35	0
Lane Group Flow (vph)	313	511	0	183	279	0	25	1230	0	116	1026	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.1	19.8		13.1	16.8		1.9	32.4		6.0	36.5	
Effective Green, g (s)	16.1	19.8		13.1	16.8		1.9	32.4		6.0	36.5	
Actuated g/C Ratio	0.18	0.22		0.14	0.18		0.02	0.35		0.07	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	312	764		254	627		37	1757		116	1973	
v/s Ratio Prot	c0.18	c0.14		0.10	0.08		0.01	c0.25		c0.07	c0.21	
v/s Ratio Perm												
v/c Ratio	1.00	0.67		0.72	0.45		0.68	0.70		1.00	0.52	
Uniform Delay, d1	37.6	32.7		37.4	33.1		44.4	25.3		42.6	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	51.8	2.2		9.6	0.5		39.3	2.4		83.6	1.0	
Delay (s)	89.4	35.0		47.0	33.6		83.7	27.6		126.2	21.7	
Level of Service	F	C		D	C		F	C		F	C	
Approach Delay (s)		55.6			38.5			28.7			32.0	
Approach LOS		E			D			C			C	
Intersection Summary												
HCM Average Control Delay			36.9			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			91.3			Sum of lost time (s)			25.0			
Intersection Capacity Utilization			69.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	20	13	10	15	31	17	1103	10	61	757	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1754		1770	1673		1770	3534		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1754		1770	1673		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	22	14	11	16	34	18	1199	11	66	823	109
RTOR Reduction (vph)	0	13	0	0	32	0	0	0	0	0	0	48
Lane Group Flow (vph)	61	23	0	11	18	0	18	1210	0	66	823	61
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.1	6.1		3.9	3.9		0.7	34.1		3.3	36.7	36.7
Effective Green, g (s)	6.1	6.1		3.9	3.9		0.7	34.1		3.3	36.7	36.7
Actuated g/C Ratio	0.09	0.09		0.06	0.06		0.01	0.52		0.05	0.56	0.56
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	164		106	100		19	1843		89	1986	888
v/s Ratio Prot	c0.03	0.01		0.01	c0.01		0.01	c0.34		c0.04	c0.23	
v/s Ratio Perm												0.04
v/c Ratio	0.37	0.14		0.10	0.18		0.95	0.66		0.74	0.41	0.07
Uniform Delay, d1	27.8	27.2		29.1	29.2		32.3	11.4		30.6	8.2	6.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.4		0.4	0.9		179.6	1.8		27.9	0.6	0.1
Delay (s)	29.2	27.6		29.5	30.1		211.9	13.2		58.5	8.8	6.7
Level of Service	C	C		C	C		F	B		E	A	A
Approach Delay (s)		28.7			30.0			16.1			11.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			15.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			65.4			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			55.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	9	287	20	4	56	354	893	26	64	449	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3341	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3341	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	10	312	22	4	61	385	971	28	70	488	291
RTOR Reduction (vph)	0	0	261	0	0	55	0	2	0	0	78	0
Lane Group Flow (vph)	115	10	51	22	4	6	385	997	0	70	701	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	7.6	14.4	14.4	1.9	8.7	8.7	22.7	47.2		6.6	31.1	
Effective Green, g (s)	7.6	14.4	14.4	1.9	8.7	8.7	22.7	47.2		6.6	31.1	
Actuated g/C Ratio	0.09	0.16	0.16	0.02	0.10	0.10	0.26	0.54		0.07	0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	305	259	38	184	156	456	1888		133	1179	
v/s Ratio Prot	c0.06	0.01		0.01	0.00		c0.22	0.28		0.04	c0.21	
v/s Ratio Perm			c0.03			0.00						
v/c Ratio	0.75	0.03	0.20	0.58	0.02	0.04	0.84	0.53		0.53	0.59	
Uniform Delay, d1	39.3	31.0	31.9	42.7	35.9	35.9	31.0	13.2		39.2	23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.6	0.0	0.4	19.6	0.0	0.1	13.4	1.1		3.7	2.2	
Delay (s)	57.9	31.0	32.2	62.3	35.9	36.0	44.4	14.3		43.0	25.5	
Level of Service	E	C	C	E	D	D	D	B		D	C	
Approach Delay (s)		39.0			42.7			22.7			27.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			27.2				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			88.1				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			64.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Proj PM
13: Auto Park Way & I-15 SB Ramps

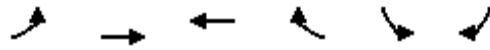
Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↗	↑↑					↗	↗	↗
Volume (vph)	0	820	888	254	1098	0	0	0	0	333	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1456	1687	3374					1603	1603	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1456	1687	3374					1603	1603	1509
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83
Adj. Flow (vph)	0	854	925	306	1234	0	0	0	0	374	0	124
RTOR Reduction (vph)	0	0	377	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	854	548	306	1234	0	0	0	0	187	187	77
Confl. Peds. (#/hr)			7									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type			Perm	Prot						Split		custom
Protected Phases		2		1	6					4	4	4
Permitted Phases			2									4
Actuated Green, G (s)		38.4	38.4	18.0	52.8					14.8	14.8	23.2
Effective Green, g (s)		38.4	38.4	18.0	52.8					14.8	14.8	23.2
Actuated g/C Ratio		0.45	0.45	0.21	0.62					0.17	0.17	0.27
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1524	658	357	2096					279	279	412
v/s Ratio Prot		0.25		c0.18	0.37					c0.12	0.12	0.05
v/s Ratio Perm			c0.38									
v/c Ratio		0.56	0.83	0.86	0.59					0.67	0.67	0.19
Uniform Delay, d1		17.1	20.5	32.3	9.6					32.8	32.8	23.7
Progression Factor		1.00	1.00	1.17	1.05					1.00	1.00	1.00
Incremental Delay, d2		1.5	11.8	15.3	1.0					6.2	6.2	0.2
Delay (s)		18.6	32.3	53.0	11.1					39.0	39.0	23.9
Level of Service		B	C	D	B					D	D	C
Approach Delay (s)		25.7			19.4			0.0			35.3	
Approach LOS		C			B			A			D	
Intersection Summary												
HCM Average Control Delay			24.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			90.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	983	0	0	741	405	611	5	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1485	1603	1608	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1485	1603	1608	1509			
Peak-hour factor, PHF	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86	0.92	0.92	0.92
Adj. Flow (vph)	205	1068	0	0	882	431	643	8	299	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	238	0	0	72	0	0	0
Lane Group Flow (vph)	205	1068	0	0	882	193	328	323	227	0	0	0
Confl. Peds. (#/hr)						3						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	10.6	52.9			38.1	38.1	22.5	22.5	22.5			
Effective Green, g (s)	10.6	52.9			38.1	38.1	22.5	22.5	22.5			
Actuated g/C Ratio	0.12	0.62			0.45	0.45	0.26	0.26	0.26			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	408	2100			1512	666	424	426	399			
v/s Ratio Prot	0.06	c0.32			c0.26		c0.20	0.20				
v/s Ratio Perm						0.13			0.15			
v/c Ratio	0.50	0.51			0.58	0.29	0.77	0.76	0.57			
Uniform Delay, d1	34.7	8.9			17.5	14.9	28.9	28.7	27.1			
Progression Factor	1.57	0.97			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.9	0.8			0.6	0.2	8.5	7.6	1.9			
Delay (s)	55.3	9.4			18.1	15.1	37.4	36.3	28.9			
Level of Service	E	A			B	B	D	D	C			
Approach Delay (s)		16.7			17.1			34.4			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			21.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			90.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	8	95	142	6	93	223
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	103	154	7	101	242
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	112	161	343			
Volume Left (vph)	9	0	101			
Volume Right (vph)	103	7	0			
Hadj (s)	-0.50	0.01	0.09			
Departure Headway (s)	4.5	4.6	4.4			
Degree Utilization, x	0.14	0.20	0.42			
Capacity (veh/h)	717	756	784			
Control Delay (s)	8.3	8.7	10.7			
Approach Delay (s)	8.3	8.7	10.7			
Approach LOS	A	A	B			
Intersection Summary						
Delay			9.7			
HCM Level of Service			A			
Intersection Capacity Utilization			41.0%	ICU Level of Service	A	
Analysis Period (min)			15			



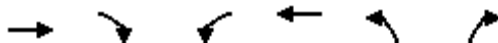
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	201	169	280	9	21	213
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	218	184	304	10	23	232
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	218	184	304	10	23	232
Volume Left (vph)	218	0	0	0	23	0
Volume Right (vph)	0	0	0	10	0	232
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	6.2	5.7	5.8	5.1	6.9	5.7
Degree Utilization, x	0.38	0.29	0.49	0.01	0.04	0.36
Capacity (veh/h)	557	607	596	663	489	593
Control Delay (s)	11.7	9.8	13.2	7.0	9.0	10.7
Approach Delay (s)	10.8		13.0		10.5	
Approach LOS	B		B		B	
Intersection Summary						
Delay			11.4			
HCM Level of Service			B			
Intersection Capacity Utilization			39.2%		ICU Level of Service	A
Analysis Period (min)			15			

Existing + Proj PM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	498	31	238	221	5	15	38	107	3	86	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.91		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583		1686		1770	1734	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1770	1846		1770	1863	1583		1686		1770	1734	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	541	34	259	240	5	16	41	116	3	93	79
RTOR Reduction (vph)	0	3	0	0	0	3	0	90	0	0	38	0
Lane Group Flow (vph)	143	572	0	259	240	2	0	83	0	3	134	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	8.7	24.0		4.0	19.3	37.3		18.0		18.0	18.0	
Effective Green, g (s)	8.7	24.0		4.0	19.3	37.3		18.0		18.0	18.0	
Actuated g/C Ratio	0.11	0.30		0.05	0.24	0.47		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	192	554		89	449	817		379		398	390	
v/s Ratio Prot	c0.08	c0.31		c0.15	0.13	0.00		c0.05		0.00	c0.08	
v/s Ratio Perm						0.00						
v/c Ratio	0.74	1.03		2.91	0.53	0.00		0.22		0.01	0.34	
Uniform Delay, d1	34.6	28.0		38.0	26.4	11.4		25.3		24.1	26.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	14.5	46.9		889.3	4.5	0.0		1.3		0.0	2.4	
Delay (s)	49.1	74.9		927.3	30.9	11.4		26.6		24.1	28.4	
Level of Service	D	E		F	C	B		C		C	C	
Approach Delay (s)		69.8			491.4			26.6			28.4	
Approach LOS		E			F			C			C	
Intersection Summary												
HCM Average Control Delay			195.8			HCM Level of Service				F		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			73.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EBT	EBR	WBL	WBT	NBL	NBR
Volume (veh/h)	56	35	340	74	21	551
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	38	370	80	23	599
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			99		899	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			99		899	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			75		90	39
cM capacity (veh/h)			1494		233	980
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	99	450	622			
Volume Left	0	370	23			
Volume Right	38	0	599			
cSH	1700	1494	877			
Volume to Capacity	0.06	0.25	0.71			
Queue Length 95th (ft)	0	24	153			
Control Delay (s)	0.0	7.1	18.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	7.1	18.4			
Approach LOS			C			
Intersection Summary						
Average Delay		12.5				
Intersection Capacity Utilization		71.3%		ICU Level of Service		C
Analysis Period (min)		15				

Existing + Proj PM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	83	4	277	145	20	1	503	397	20	243	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1851		1770	1829		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1851		1770	1829		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	90	4	301	158	22	1	547	432	22	264	134
RTOR Reduction (vph)	0	2	0	0	6	0	0	0	193	0	0	74
Lane Group Flow (vph)	91	92	0	301	174	0	1	547	239	22	264	60
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	6.9	7.5		16.6	17.2		0.7	34.2	34.2	1.4	34.9	34.9
Effective Green, g (s)	6.9	7.5		16.6	17.2		0.7	34.2	34.2	1.4	34.9	34.9
Actuated g/C Ratio	0.09	0.10		0.21	0.22		0.01	0.44	0.44	0.02	0.45	0.45
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	157	179		378	405		16	820	697	32	837	711
v/s Ratio Prot	0.05	0.05		c0.17	c0.10		0.00	c0.29		c0.01	0.14	
v/s Ratio Perm									0.15			0.04
v/c Ratio	0.58	0.52		0.80	0.43		0.06	0.67	0.34	0.69	0.32	0.08
Uniform Delay, d1	34.0	33.4		28.9	26.0		38.2	17.2	14.3	37.9	13.7	12.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	2.5		11.1	0.7		1.6	4.3	1.3	47.1	1.0	0.2
Delay (s)	39.1	35.9		40.0	26.8		39.8	21.5	15.7	85.0	14.7	12.5
Level of Service	D	D		D	C		D	C	B	F	B	B
Approach Delay (s)		37.5			35.1			19.0			17.7	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			24.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			77.7			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			57.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX H

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING + CUMULATIVE PROJECTS

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Existing + Cumulative Projects AM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	508	10	270	604	570	0	0	611	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1601	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1601	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	552	11	293	657	620	0	0	664	402
RTOR Reduction (vph)	0	0	0	0	4	167	0	0	0	0	0	251
Lane Group Flow (vph)	0	0	0	298	290	97	657	620	0	0	664	151
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				26.2	26.2	26.2	19.8	62.6			37.6	37.6
Effective Green, g (s)				26.2	26.2	26.2	19.8	62.6			37.6	37.6
Actuated g/C Ratio				0.26	0.26	0.26	0.20	0.63			0.38	0.38
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				440	419	394	680	2215			1912	595
v/s Ratio Prot				0.18	c0.18		c0.19	0.18			c0.13	
v/s Ratio Perm						0.06						0.10
v/c Ratio				0.68	0.69	0.25	0.97	0.28			0.35	0.25
Uniform Delay, d1				33.1	33.3	29.1	39.8	8.5			22.4	21.5
Progression Factor				1.00	1.00	1.00	0.62	0.39			1.00	1.00
Incremental Delay, d2				4.1	4.9	0.3	21.2	0.2			0.5	1.0
Delay (s)				37.2	38.1	29.4	45.8	3.6			22.9	22.6
Level of Service				D	D	C	D	A			C	C
Approach Delay (s)		0.0			35.1			25.3			22.8	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM Average Control Delay			27.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			70.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
2: SR 78 EB Ramps &

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	140	725	0	0	0	0	909	434	220	899	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Flt	1.00	0.90	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1529	1504					3539	2787	3433	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1529	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	152	788	0	0	0	0	988	472	239	977	0
RTOR Reduction (vph)	0	42	42	0	0	0	0	0	302	0	0	0
Lane Group Flow (vph)	259	454	431	0	0	0	0	988	170	239	977	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	36.7	36.7	36.7					36.1	36.1	10.8	52.2	
Effective Green, g (s)	36.7	36.7	36.7					36.1	36.1	10.8	52.2	
Actuated g/C Ratio	0.37	0.37	0.37					0.36	0.36	0.11	0.52	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	617	561	552					1278	1006	371	1847	
v/s Ratio Prot	0.15	c0.30						c0.28		0.07	c0.28	
v/s Ratio Perm			0.29						0.06			
v/c Ratio	0.42	0.81	0.78					0.77	0.17	0.64	0.53	
Uniform Delay, d1	23.7	28.5	28.1					28.3	21.7	42.8	15.8	
Progression Factor	1.00	1.00	1.00					0.52	0.81	1.07	0.37	
Incremental Delay, d2	0.5	8.4	7.1					3.6	0.3	3.5	1.0	
Delay (s)	24.1	37.0	35.2					18.2	17.8	49.2	6.9	
Level of Service	C	D	D					B	B	D	A	
Approach Delay (s)		33.6			0.0			18.1			15.2	
Approach LOS		C			A			B			B	
Intersection Summary												
HCM Average Control Delay			22.1									
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			70.9%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	420	210	104	640	245	443	803	58	404	874	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4895	4895
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4895	4895
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	457	228	113	696	266	482	873	63	439	950	315
RTOR Reduction (vph)	0	0	153	0	0	168	0	0	27	0	59	0
Lane Group Flow (vph)	370	457	75	113	696	98	482	873	36	439	1206	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.7	33.0	33.0	5.0	26.3	26.3	11.0	29.0	29.0	13.0	31.0	31.0
Effective Green, g (s)	12.7	33.0	33.0	5.0	26.3	26.3	11.0	29.0	29.0	13.0	31.0	31.0
Actuated g/C Ratio	0.13	0.33	0.33	0.05	0.26	0.26	0.11	0.29	0.29	0.13	0.31	0.31
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	436	1168	522	172	931	416	378	1475	459	446	1517	1517
v/s Ratio Prot	c0.11	0.13		0.03	c0.20		c0.14	0.17		c0.13	c0.25	
v/s Ratio Perm			0.05			0.06			0.02			
v/c Ratio	0.85	0.39	0.14	0.66	0.75	0.24	1.28	0.59	0.08	0.98	0.79	0.79
Uniform Delay, d1	42.7	25.8	23.6	46.7	33.8	29.0	44.5	30.4	25.8	43.4	31.6	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	0.85	0.85
Incremental Delay, d2	14.2	0.2	0.1	8.7	3.3	0.3	142.9	1.8	0.3	33.7	3.5	3.5
Delay (s)	57.0	26.0	23.7	55.4	37.1	29.2	187.4	32.2	26.1	81.8	30.3	30.3
Level of Service	E	C	C	E	D	C	F	C	C	F	C	C
Approach Delay (s)		36.4			37.1			84.7			43.6	
Approach LOS		D			D			F			D	
Intersection Summary												
HCM Average Control Delay			51.9				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			19.0		
Intersection Capacity Utilization			79.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	5	56	5	5	5	183	850	5	70	1040	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1723		1770	3536		1770	3451	
Flt Permitted	0.75	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1399	1863	1583	1405	1723		1770	3536		1770	3451	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	363	5	61	5	5	5	199	924	5	76	1130	226
RTOR Reduction (vph)	0	0	44	0	4	0	0	0	0	0	18	0
Lane Group Flow (vph)	363	5	17	5	6	0	199	929	0	76	1338	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4				8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	25.3	25.3	25.3	25.3	25.3		11.0	45.1		6.8	40.9	
Effective Green, g (s)	25.3	25.3	25.3	25.3	25.3		11.0	45.1		6.8	40.9	
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.28		0.12	0.51		0.08	0.46	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	397	528	449	399	489		218	1788		135	1582	
v/s Ratio Prot		0.00			0.00		c0.11	0.26		0.04	c0.39	
v/s Ratio Perm	c0.26		0.01	0.00								
v/c Ratio	0.91	0.01	0.04	0.01	0.01		0.91	0.52		0.56	0.85	
Uniform Delay, d1	30.9	22.9	23.1	23.0	23.0		38.6	14.8		39.8	21.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.1	0.0	0.0	0.0	0.0		37.7	1.1		5.3	5.8	
Delay (s)	56.0	23.0	23.2	23.0	23.0		76.4	15.9		45.1	27.1	
Level of Service	E	C	C	C	C		E	B		D	C	
Approach Delay (s)		50.9			23.0			26.5			28.1	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			89.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			80.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	184	130	255	401	183	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	141	277	436	199	220
RTOR Reduction (vph)	0	113	0	0	0	96
Lane Group Flow (vph)	200	28	277	436	199	124
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	11.4	11.4	13.2	29.1	18.7	31.9
Effective Green, g (s)	11.4	11.4	13.2	29.1	18.7	31.9
Actuated g/C Ratio	0.20	0.20	0.23	0.51	0.33	0.56
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	374	318	411	954	583	1014
v/s Ratio Prot	0.11		c0.16	c0.23	c0.11	0.03
v/s Ratio Perm		0.02				0.05
v/c Ratio	0.53	0.09	0.67	0.46	0.34	0.12
Uniform Delay, d1	20.3	18.5	19.8	8.8	14.4	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	4.3	0.3	1.6	0.1
Delay (s)	21.8	18.6	24.2	9.2	16.0	5.9
Level of Service	C	B	C	A	B	A
Approach Delay (s)	20.5			15.0	10.7	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			15.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			56.8		Sum of lost time (s)	9.0
Intersection Capacity Utilization			45.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing + Cumulative Projects AM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	22	0	0	259	11	162	151	0	285	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	24	0	0	282	12	176	164	0	310	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	703	674	155	379	510	88	310			340		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	703	674	155	379	510	88	310			340		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	70	99			100		
cM capacity (veh/h)	227	371	863	534	461	953	1248			1216		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	24	282	12	88	88	164	207	103				
Volume Left	0	0	12	0	0	0	0	0				
Volume Right	24	282	0	0	0	164	0	0				
cSH	863	953	1248	1700	1700	1700	1700	1700				
Volume to Capacity	0.03	0.30	0.01	0.05	0.05	0.10	0.12	0.06				
Queue Length 95th (ft)	2	31	1	0	0	0	0	0				
Control Delay (s)	9.3	10.4	7.9	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.3	10.4	0.3	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			27.2%	ICU Level of Service				A				
Analysis Period (min)			15									

Existing+Cumulative Projects AM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  			 				
Volume (vph)	447	946	0	0	966	201	440	3	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1556		1775	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1556		1775	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	486	1028	0	0	1050	218	478	3	511	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	153	0	0	47	0	0	0
Lane Group Flow (vph)	486	1028	0	0	1050	65	0	481	464	0	0	0
Confl. Peds. (#/hr)			2			3	6					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	18.9	54.5			31.4	31.4		40.4	40.4			
Effective Green, g (s)	18.9	54.5			31.4	31.4		40.4	40.4			
Actuated g/C Ratio	0.18	0.52			0.30	0.30		0.38	0.38			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	618	2639			1521	465		683	609			
v/s Ratio Prot	c0.14	0.20			c0.21			0.27				
v/s Ratio Perm						0.04			c0.29			
v/c Ratio	0.79	0.39			0.69	0.14		0.70	0.76			
Uniform Delay, d1	41.1	15.2			32.5	26.9		27.3	28.1			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	6.5	0.4			2.6	0.6		6.0	8.7			
Delay (s)	47.7	15.7			35.1	27.6		33.3	36.8			
Level of Service	D	B			D	C		C	D			
Approach Delay (s)		25.9			33.8			35.1			0.0	
Approach LOS		C			C			D			A	
Intersection Summary												
HCM Average Control Delay			31.0			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			67.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects AM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	870	90	200	936	270	70	80	170	353	120	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99	0.85	1.00	1.00	0.85		0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1560	3433	5977	1258	1770	1863	1583		3182	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1560	3433	5977	1258	1770	1863	1583		3182	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	946	98	217	1017	293	76	87	185	384	130	707
RTOR Reduction (vph)	0	0	72	0	7	159	0	0	162	0	212	0
Lane Group Flow (vph)	86	946	26	217	1072	72	76	87	23	0	1009	0
Confl. Peds. (#/hr)			2			5						
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	4.9	28.8	28.8	10.4	34.3	34.3	13.5	13.5	13.5		38.4	
Effective Green, g (s)	4.9	28.8	28.8	10.4	34.3	34.3	13.5	13.5	13.5		38.4	
Actuated g/C Ratio	0.04	0.26	0.26	0.09	0.31	0.31	0.12	0.12	0.12		0.35	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	153	1331	408	325	1864	392	217	229	194		1111	
v/s Ratio Prot	0.03	c0.19		c0.06	0.18		0.04	c0.05			c0.32	
v/s Ratio Perm			0.02			0.06			0.01			
v/c Ratio	0.56	0.71	0.06	0.67	0.58	0.18	0.35	0.38	0.12		0.91	
Uniform Delay, d1	51.5	36.8	30.5	48.1	31.7	27.6	44.2	44.4	42.9		34.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	4.7	3.2	0.3	5.1	0.4	0.2	1.0	1.1	0.3		10.7	
Delay (s)	56.2	40.1	30.8	53.3	32.2	27.9	45.2	45.5	43.2		44.8	
Level of Service	E	D	C	D	C	C	D	D	D		D	
Approach Delay (s)		40.5			34.5			44.2			44.8	
Approach LOS		D			C			D			D	
Intersection Summary												
HCM Average Control Delay			39.9			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			90.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
9: Auto Park Way & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	442	430	100	731	40	300	706	50	150	913	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.93		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3277		3433	3512		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3277		3433	3512		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	480	467	109	795	43	326	767	54	163	992	613
RTOR Reduction (vph)	0	143	0	0	4	0	0	0	37	0	0	5
Lane Group Flow (vph)	228	804	0	109	834	0	326	767	17	163	992	608
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	16.3	33.4		5.0	22.1		10.1	29.2	29.2	7.0	24.1	40.4
Effective Green, g (s)	16.3	33.4		5.0	22.1		10.1	29.2	29.2	7.0	24.1	40.4
Actuated g/C Ratio	0.18	0.36		0.05	0.24		0.11	0.32	0.32	0.08	0.26	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	604	1182		185	838		374	1603	499	260	1323	776
v/s Ratio Prot	0.07	0.25		0.03	c0.24		c0.09	0.15		0.05	0.20	c0.14
v/s Ratio Perm									0.01			0.25
v/c Ratio	0.38	0.68		0.59	1.00		0.87	0.48	0.03	0.63	0.75	0.78
Uniform Delay, d1	33.7	25.1		42.8	35.2		40.6	25.6	21.9	41.5	31.5	22.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.6		4.7	29.8		19.4	1.0	0.1	4.7	3.9	5.2
Delay (s)	34.1	26.7		47.5	65.0		60.0	26.6	22.1	46.2	35.4	27.5
Level of Service	C	C		D	E		E	C	C	D	D	C
Approach Delay (s)		28.1			63.0			35.9			33.7	
Approach LOS		C			E			D			C	
Intersection Summary												
HCM Average Control Delay			38.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			92.6			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			77.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	318	15	150	328	180	20	680	170	120	1180	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3516		1770	3351		1770	4933		1770	4938	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3516		1770	3351		1770	4933		1770	4938	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	346	16	163	357	196	22	739	185	130	1283	307
RTOR Reduction (vph)	0	4	0	0	84	0	0	40	0	0	35	0
Lane Group Flow (vph)	191	358	0	163	469	0	22	884	0	130	1555	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.5	19.9		11.4	18.8		1.5	32.3		8.9	39.7	
Effective Green, g (s)	12.5	19.9		11.4	18.8		1.5	32.3		8.9	39.7	
Actuated g/C Ratio	0.14	0.22		0.12	0.20		0.02	0.35		0.10	0.43	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	239	756		218	681		29	1723		170	2119	
v/s Ratio Prot	c0.11	0.10		0.09	c0.14		0.01	0.18		c0.07	c0.31	
v/s Ratio Perm												
v/c Ratio	0.80	0.47		0.75	0.69		0.76	0.51		0.76	0.73	
Uniform Delay, d1	38.8	31.7		39.2	34.1		45.3	23.9		40.8	22.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.8	0.5		13.1	2.9		71.7	1.1		18.3	2.3	
Delay (s)	55.6	32.2		52.2	37.1		117.0	25.0		59.1	24.3	
Level of Service	E	C		D	D		F	C		E	C	
Approach Delay (s)		40.3			40.5			27.1			26.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			92.5			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			73.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
11: W. 11th Ave & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	21	27	16	47	75	22	733	7	28	1105	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.92		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1707		1770	1690		1770	3534		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1707		1770	1690		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	23	29	17	51	82	24	797	8	30	1201	51
RTOR Reduction (vph)	0	26	0	0	74	0	0	1	0	0	0	26
Lane Group Flow (vph)	83	26	0	17	59	0	24	804	0	30	1201	25
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.8	6.8		6.3	6.3		1.3	30.0		1.9	30.6	30.6
Effective Green, g (s)	6.8	6.8		6.3	6.3		1.3	30.0		1.9	30.6	30.6
Actuated g/C Ratio	0.11	0.11		0.10	0.10		0.02	0.48		0.03	0.49	0.49
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	191	184		177	169		37	1683		53	1719	769
v/s Ratio Prot	c0.05	0.02		0.01	c0.04		0.01	0.23		c0.02	c0.34	
v/s Ratio Perm												0.02
v/c Ratio	0.43	0.14		0.10	0.35		0.65	0.48		0.57	0.70	0.03
Uniform Delay, d1	26.3	25.5		25.8	26.4		30.6	11.2		30.1	12.6	8.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.4		0.2	1.3		33.0	1.0		13.1	2.4	0.1
Delay (s)	27.9	25.8		26.0	27.7		63.6	12.2		43.3	15.0	8.5
Level of Service	C	C		C	C		E	B		D	B	A
Approach Delay (s)		27.1			27.5			13.7			15.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			63.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			53.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
12: W Citracado Pkwy & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	10	386	90	12	52	325	317	43	138	1037	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3476		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3476		1770	3526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	11	420	98	13	57	353	345	47	150	1127	29
RTOR Reduction (vph)	0	0	311	0	0	51	0	10	0	0	2	0
Lane Group Flow (vph)	90	11	109	98	13	6	353	382	0	150	1154	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	9.2	11.8	11.8	7.5	10.1	10.1	21.2	43.1		12.6	34.5	
Effective Green, g (s)	9.2	11.8	11.8	7.5	10.1	10.1	21.2	43.1		12.6	34.5	
Actuated g/C Ratio	0.10	0.13	0.13	0.08	0.11	0.11	0.23	0.46		0.14	0.37	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	236	201	143	202	172	403	1611		240	1308	
v/s Ratio Prot	0.05	0.01		c0.06	0.01		c0.20	0.11		0.08	c0.33	
v/s Ratio Perm			c0.07			0.00						
v/c Ratio	0.51	0.05	0.54	0.69	0.06	0.04	0.88	0.24		0.62	0.88	
Uniform Delay, d1	39.8	35.7	38.1	41.6	37.2	37.1	34.6	15.0		38.0	27.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.1	3.0	12.8	0.1	0.1	18.7	0.1		5.0	7.3	
Delay (s)	42.3	35.7	41.1	54.4	37.3	37.2	53.3	15.1		43.0	34.7	
Level of Service	D	D	D	D	D	D	D	B		D	C	
Approach Delay (s)		41.2			47.2			33.2			35.6	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM Average Control Delay			36.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			93.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			70.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	580	658	127	1214	0	0	0	0	163	7	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		3374	1467	1687	3374					1603	1615	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		3374	1467	1687	3374					1603	1615	1509
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	744	700	184	1412	0	0	0	0	209	12	101
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	744	700	184	1412	0	0	0	0	111	110	69
Confl. Peds. (#/hr)			11									
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type		Perm		Prot						Split	custom	
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									4
Actuated Green, G (s)		46.0	46.0	13.6	55.6					11.6	11.6	20.4
Effective Green, g (s)		46.0	46.0	13.6	55.6					11.6	11.6	20.4
Actuated g/C Ratio		0.54	0.54	0.16	0.65					0.14	0.14	0.24
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1826	794	270	2207					219	220	362
v/s Ratio Prot		0.22		c0.11	0.42					c0.07	0.07	0.05
v/s Ratio Perm			c0.48									
v/c Ratio		0.41	0.88	0.68	0.64					0.51	0.50	0.19
Uniform Delay, d1		11.5	17.1	33.7	8.7					34.0	34.0	25.7
Progression Factor		1.00	1.00	1.11	1.11					1.00	1.00	1.00
Incremental Delay, d2		0.7	13.5	6.0	1.1					1.8	1.8	0.3
Delay (s)		12.2	30.6	43.3	10.8					35.9	35.8	26.0
Level of Service		B	C	D	B					D	D	C
Approach Delay (s)		21.1			14.6			0.0			32.8	
Approach LOS		C			B			A			C	
Intersection Summary												
HCM Average Control Delay			19.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			93.2%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cumulative Projects AM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

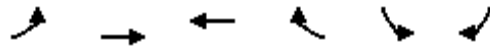
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	625	0	0	665	318	676	1	187	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	144	781	0	0	756	361	814	4	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	213	0	0	107	0	0	0
Lane Group Flow (vph)	144	781	0	0	756	148	407	411	146	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	9.1	48.2			34.9	34.9	27.2	27.2	27.2			
Effective Green, g (s)	9.1	48.2			34.9	34.9	27.2	27.2	27.2			
Actuated g/C Ratio	0.11	0.57			0.41	0.41	0.32	0.32	0.32			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	350	1913			1385	606	513	514	483			
v/s Ratio Prot	0.04	c0.23			c0.22		0.25	c0.26				
v/s Ratio Perm						0.10			0.10			
v/c Ratio	0.41	0.41			0.55	0.24	0.79	0.80	0.30			
Uniform Delay, d1	35.4	10.4			19.0	16.4	26.3	26.4	21.8			
Progression Factor	1.63	0.79			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.6			0.4	0.2	8.2	8.5	0.4			
Delay (s)	58.6	8.8			19.5	16.6	34.6	34.9	22.1			
Level of Service	E	A			B	B	C	C	C			
Approach Delay (s)		16.6			18.6			31.8			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			22.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			93.2%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	22	92	224	60	85	153
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	100	243	65	92	166
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	124	309	259			
Volume Left (vph)	24	0	92			
Volume Right (vph)	100	65	0			
Hadj (s)	-0.41	-0.09	0.11			
Departure Headway (s)	4.8	4.4	4.7			
Degree Utilization, x	0.16	0.38	0.34			
Capacity (veh/h)	680	786	741			
Control Delay (s)	8.7	10.1	10.0			
Approach Delay (s)	8.7	10.1	10.0			
Approach LOS	A	B	A			
Intersection Summary						
Delay			9.8			
HCM Level of Service			A			
Intersection Capacity Utilization			45.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Existing + Cumulative Projects AM
 16: Harmony Grove Village Pkwy & Country Club Dr

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	156	235	182	55	7	194
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	170	255	198	60	8	211
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	170	255	198	60	8	211
Volume Left (vph)	170	0	0	0	8	0
Volume Right (vph)	0	0	0	60	0	211
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	6.0	5.5	5.7	5.0	6.7	5.5
Degree Utilization, x	0.28	0.39	0.31	0.08	0.01	0.32
Capacity (veh/h)	577	636	606	683	503	611
Control Delay (s)	10.1	10.7	10.1	7.2	8.6	9.9
Approach Delay (s)	10.5		9.4		9.8	
Approach LOS	B		A		A	
Intersection Summary						
Delay			10.0			
HCM Level of Service			B			
Intersection Capacity Utilization			31.6%		ICU Level of Service	A
Analysis Period (min)			15			

Existing + Cumulative Projects AM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	260	10	10	431	5	10	15	25	5	10	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	1852		1770	1863	1583		1719		1770	1597	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	1852		1770	1863	1583		1719		1770	1597	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	283	11	11	468	5	11	16	27	5	11	218
RTOR Reduction (vph)	0	1	0	0	0	2	0	21	0	0	171	0
Lane Group Flow (vph)	125	293	0	11	468	3	0	33	0	5	58	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.0	30.4		0.8	25.2	43.2		18.0		18.0	18.0	
Effective Green, g (s)	6.0	30.4		0.8	25.2	43.2		18.0		18.0	18.0	
Actuated g/C Ratio	0.07	0.37		0.01	0.30	0.52		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	128	677		17	564	898		372		383	346	
v/s Ratio Prot	c0.07	0.16		0.01	c0.25	0.00		c0.02		0.00	c0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.98	0.43		0.65	0.83	0.00		0.09		0.01	0.17	
Uniform Delay, d1	38.5	19.9		41.1	27.0	9.6		26.0		25.6	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	71.6	2.0		62.0	13.3	0.0		0.5		0.1	1.0	
Delay (s)	110.1	21.9		103.1	40.3	9.6		26.5		25.7	27.6	
Level of Service	F	C		F	D	A		C		C	C	
Approach Delay (s)		48.2			41.4			26.5			27.5	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			40.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			83.2			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			52.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	135	20	500	94	30	300
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	22	543	102	33	326
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			168		1347	158
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			168		1347	158
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			61		68	63
cM capacity (veh/h)			1409		102	888
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	168	646	359			
Volume Left	0	543	33			
Volume Right	22	0	326			
cSH	1700	1409	523			
Volume to Capacity	0.10	0.39	0.69			
Queue Length 95th (ft)	0	46	131			
Control Delay (s)	0.0	8.3	25.6			
Lane LOS		A	D			
Approach Delay (s)	0.0	8.3	25.6			
Approach LOS			D			
Intersection Summary						
Average Delay		12.4				
Intersection Capacity Utilization		71.2%		ICU Level of Service		C
Analysis Period (min)		15				

Existing + Cumulative Projects AM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	124	1	304	77	44	2	205	146	11	358	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1861		1770	1761		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1861		1770	1761		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	135	1	330	84	48	2	223	159	12	389	155
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	97	0	0	95
Lane Group Flow (vph)	111	136	0	330	107	0	2	223	62	12	389	60
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.8	8.8		17.9	18.9		0.6	28.7	28.7	0.6	28.7	28.7
Effective Green, g (s)	7.8	8.8		17.9	18.9		0.6	28.7	28.7	0.6	28.7	28.7
Actuated g/C Ratio	0.11	0.12		0.24	0.26		0.01	0.39	0.39	0.01	0.39	0.39
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	221		428	450		14	723	614	14	723	614
v/s Ratio Prot	0.06	c0.07		c0.19	0.06		0.00	0.12		c0.01	c0.21	
v/s Ratio Perm									0.04			0.04
v/c Ratio	0.59	0.62		0.77	0.24		0.14	0.31	0.10	0.86	0.54	0.10
Uniform Delay, d1	31.6	31.0		26.1	21.8		36.4	15.7	14.4	36.7	17.5	14.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	5.0		8.4	0.3		4.7	1.1	0.3	164.6	2.9	0.3
Delay (s)	36.6	36.0		34.5	22.1		41.1	16.9	14.8	201.3	20.4	14.7
Level of Service	D	D		C	C		D	B	B	F	C	B
Approach Delay (s)		36.3			31.0			16.1			22.7	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM Average Control Delay			25.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			74.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			53.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	499	10	640	668	962	0	0	1045	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.89	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.99	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1495	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.99	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1495	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	542	11	696	726	1046	0	0	1136	598
RTOR Reduction (vph)	0	0	0	0	56	56	0	0	0	0	0	427
Lane Group Flow (vph)	0	0	0	434	355	348	726	1046	0	0	1136	171
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				32.1	32.1	32.1	22.9	56.7			28.6	28.6
Effective Green, g (s)				32.1	32.1	32.1	22.9	56.7			28.6	28.6
Actuated g/C Ratio				0.32	0.32	0.32	0.23	0.57			0.29	0.29
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				540	480	483	786	2007			1454	453
v/s Ratio Prot				c0.26	0.24		c0.21	0.30			c0.22	
v/s Ratio Perm						0.23						0.11
v/c Ratio				0.80	0.74	0.72	0.92	0.52			0.78	0.38
Uniform Delay, d1				31.1	30.2	30.0	37.7	13.3			32.8	28.6
Progression Factor				1.00	1.00	1.00	1.26	0.18			1.00	1.00
Incremental Delay, d2				8.5	6.1	5.3	7.8	0.4			4.2	2.4
Delay (s)				39.5	36.3	35.3	55.4	2.7			37.1	31.0
Level of Service				D	D	D	E	A			D	C
Approach Delay (s)		0.0			37.1			24.3			35.0	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			87.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
2: SR 78 EB Ramps &

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	375	60	499	0	0	0	0	1255	655	570	974	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Frt	1.00	0.90	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1517	1504					3539	2787	3433	3539	
Flt Permitted	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1517	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	65	542	0	0	0	0	1364	712	620	1059	0
RTOR Reduction (vph)	0	63	63	0	0	0	0	0	363	0	0	0
Lane Group Flow (vph)	355	277	257	0	0	0	0	1364	349	620	1059	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	28.0	28.0	28.0					38.8	38.8	16.8	60.8	
Effective Green, g (s)	28.0	28.0	28.0					38.8	38.8	16.8	60.8	
Actuated g/C Ratio	0.28	0.28	0.28					0.39	0.39	0.17	0.61	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	471	425	421					1373	1081	577	2152	
v/s Ratio Prot	c0.21	0.18						c0.39		c0.18	0.30	
v/s Ratio Perm			0.17						0.13			
v/c Ratio	0.75	0.65	0.61					0.99	0.32	1.07	0.49	
Uniform Delay, d1	32.9	31.7	31.3					30.5	21.4	41.6	11.0	
Progression Factor	1.00	1.00	1.00					0.48	0.08	0.75	0.74	
Incremental Delay, d2	6.7	3.6	2.5					15.8	0.4	51.7	0.5	
Delay (s)	39.6	35.2	33.8					30.3	2.0	82.8	8.6	
Level of Service	D	D	C					C	A	F	A	
Approach Delay (s)		36.3			0.0			20.6			36.0	
Approach LOS		D			A			C			D	
Intersection Summary												
HCM Average Control Delay			29.4									
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			87.4%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	800	349	40	430	500	393	995	63	190	657	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4815	4815
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4815	4815
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	870	379	43	467	543	427	1082	68	207	714	391
RTOR Reduction (vph)	0	0	197	0	0	142	0	0	24	0	102	0
Lane Group Flow (vph)	489	870	182	43	467	401	427	1082	44	207	1003	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.3	38.6	38.6	2.4	27.7	27.7	11.0	32.0	32.0	7.0	28.0	28.0
Effective Green, g (s)	13.3	38.6	38.6	2.4	27.7	27.7	11.0	32.0	32.0	7.0	28.0	28.0
Actuated g/C Ratio	0.13	0.39	0.39	0.02	0.28	0.28	0.11	0.32	0.32	0.07	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	457	1366	611	82	980	438	378	1627	507	240	1348	1348
v/s Ratio Prot	c0.14	0.25		0.01	0.13		c0.12	0.21		0.06	c0.21	
v/s Ratio Perm			0.11			c0.25			0.03			
v/c Ratio	1.07	0.64	0.30	0.52	0.48	0.92	1.13	0.67	0.09	0.86	0.74	0.74
Uniform Delay, d1	43.4	25.0	21.3	48.2	30.1	35.0	44.5	29.4	23.8	46.0	32.7	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.07	1.12	1.12
Incremental Delay, d2	62.1	1.0	0.3	5.9	0.4	23.6	86.4	2.2	0.3	22.9	3.3	3.3
Delay (s)	105.4	26.0	21.6	54.2	30.5	58.7	130.9	31.5	24.1	72.0	39.8	39.8
Level of Service	F	C	C	D	C	E	F	C	C	E	D	D
Approach Delay (s)		47.4			46.0			58.1			44.9	
Approach LOS		D			D			E			D	
Intersection Summary												
HCM Average Control Delay			49.5				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			75.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	271	5	43	5	5	5	109	1000	5	80	880	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1723		1770	3537		1770	3396	
Flt Permitted	0.75	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1399	1863	1583	1405	1723		1770	3537		1770	3396	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	5	47	5	5	5	118	1087	5	87	957	354
RTOR Reduction (vph)	0	0	35	0	4	0	0	0	0	0	38	0
Lane Group Flow (vph)	295	5	12	5	6	0	118	1092	0	87	1273	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4				8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6		7.5	43.8		7.2	43.5	
Effective Green, g (s)	21.6	21.6	21.6	21.6	21.6		7.5	43.8		7.2	43.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26		0.09	0.52		0.09	0.51	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	476	404	359	440		157	1831		151	1746	
v/s Ratio Prot		0.00			0.00		c0.07	0.31		0.05	c0.37	
v/s Ratio Perm	c0.21		0.01	0.00								
v/c Ratio	0.83	0.01	0.03	0.01	0.01		0.75	0.60		0.58	0.73	
Uniform Delay, d1	29.7	23.5	23.6	23.5	23.5		37.6	14.2		37.2	16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.4	0.0	0.0	0.0	0.0		18.2	1.4		5.2	2.7	
Delay (s)	44.2	23.5	23.7	23.6	23.6		55.8	15.7		42.5	18.7	
Level of Service	D	C	C	C	C		E	B		D	B	
Approach Delay (s)		41.1			23.6			19.6			20.2	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM Average Control Delay			22.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			84.6			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	344	251	281	260	175	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	273	305	283	190	552
RTOR Reduction (vph)	0	198	0	0	0	103
Lane Group Flow (vph)	374	75	305	283	190	449
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	16.5	16.5	14.0	35.0	16.4	30.4
Effective Green, g (s)	16.5	16.5	14.0	35.0	16.4	30.4
Actuated g/C Ratio	0.27	0.27	0.23	0.58	0.27	0.50
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	509	432	410	1080	481	915
v/s Ratio Prot	c0.20		c0.17	0.15	0.11	c0.11
v/s Ratio Perm		0.05				0.17
v/c Ratio	0.73	0.17	0.74	0.26	0.40	0.49
Uniform Delay, d1	20.0	16.7	21.5	6.3	18.0	9.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2	7.2	0.1	2.4	0.4
Delay (s)	25.4	16.9	28.7	6.4	20.4	10.3
Level of Service	C	B	C	A	C	B
Approach Delay (s)	21.8			18.0	12.9	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			17.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			60.4		Sum of lost time (s)	13.5
Intersection Capacity Utilization			57.1%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing+Cumulative Projects PM
6: Avenida del Diablo & Citracado Pkwy

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	18	0	0	222	22	202	112	0	411	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	20	0	0	241	24	220	122	0	447	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	846	836	223	510	714	110	447			341		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	846	836	223	510	714	110	447			341		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	74	98			100		
cM capacity (veh/h)	186	295	780	428	347	923	1110			1214		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	20	241	24	110	110	122	298	149				
Volume Left	0	0	24	0	0	0	0	0				
Volume Right	20	241	0	0	0	122	0	0				
cSH	780	923	1110	1700	1700	1700	1700	1700				
Volume to Capacity	0.03	0.26	0.02	0.06	0.06	0.07	0.18	0.09				
Queue Length 95th (ft)	2	26	2	0	0	0	0	0				
Control Delay (s)	9.7	10.3	8.3	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.7	10.3	0.5	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			26.0%	ICU Level of Service					A			
Analysis Period (min)			15									

Existing+Cumulative Projects PM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  							
Volume (vph)	810	1374	0	0	1150	373	310	1	430	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1550		1774	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1550		1774	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	880	1493	0	0	1250	405	337	1	467	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	302	0	0	20	0	0	0
Lane Group Flow (vph)	880	1493	0	0	1250	103	0	338	447	0	0	0
Confl. Peds. (#/hr)						5	10					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	27.9	58.9			26.8	26.8		36.0	36.0			
Effective Green, g (s)	27.9	58.9			26.8	26.8		36.0	36.0			
Actuated g/C Ratio	0.27	0.56			0.26	0.26		0.34	0.34			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	912	2852			1298	396		608	543			
v/s Ratio Prot	c0.26	0.29			c0.25			0.19				
v/s Ratio Perm						0.07			c0.28			
v/c Ratio	0.96	0.52			0.96	0.26		0.56	0.82			
Uniform Delay, d1	38.1	14.3			38.6	31.2		28.0	31.6			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	21.5	0.7			17.6	1.6		3.6	13.3			
Delay (s)	59.6	15.0			56.2	32.8		31.7	44.9			
Level of Service	E	B			E	C		C	D			
Approach Delay (s)		31.5			50.5			39.3			0.0	
Approach LOS		C			D			D			A	
Intersection Summary												
HCM Average Control Delay			39.3			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			75.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	1593	120	270	780	410	80	70	330	261	150	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97	0.85	1.00	1.00	0.85		0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1549	3433	5853	1282	1770	1863	1561		3183	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1549	3433	5853	1282	1770	1863	1561		3183	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	1732	130	293	848	446	87	76	359	284	163	457
RTOR Reduction (vph)	0	0	69	0	37	149	0	0	258	0	181	0
Lane Group Flow (vph)	91	1732	61	293	1025	83	87	76	101	0	723	0
Confl. Peds. (#/hr)			8						1			2
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	6.1	32.8	32.8	12.8	39.5	39.5	14.0	14.0	14.0		31.5	
Effective Green, g (s)	6.1	32.8	32.8	12.8	39.5	39.5	14.0	14.0	14.0		31.5	
Actuated g/C Ratio	0.06	0.30	0.30	0.12	0.36	0.36	0.13	0.13	0.13		0.29	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	190	1516	462	399	2102	460	225	237	199		911	
v/s Ratio Prot	0.03	c0.34		c0.09	0.18		0.05	0.04			c0.23	
v/s Ratio Perm			0.04			0.06			c0.06			
v/c Ratio	0.48	1.14	0.13	0.73	0.49	0.18	0.39	0.32	0.51		0.79	
Uniform Delay, d1	50.4	38.6	28.2	47.0	27.4	24.2	44.1	43.7	44.8		36.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.9	72.5	0.6	6.9	0.2	0.2	1.1	0.8	2.0		4.8	
Delay (s)	52.3	111.1	28.8	53.8	27.6	24.4	45.2	44.5	46.8		41.1	
Level of Service	D	F	C	D	C	C	D	D	D		D	
Approach Delay (s)		102.9			31.9			46.2			41.1	
Approach LOS		F			C			D			D	
Intersection Summary												
HCM Average Control Delay			63.0			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			90.6%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
9: Auto Park Way & W. Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	564	881	300	130	352	180	260	965	70	195	758	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3404		3433	3360		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3404		3433	3360		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	613	958	326	141	383	196	283	1049	76	212	824	348
RTOR Reduction (vph)	0	42	0	0	81	0	0	0	54	0	0	55
Lane Group Flow (vph)	613	1242	0	141	498	0	283	1049	22	212	824	293
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	14.0	28.0		4.0	18.0		8.0	23.0	23.0	5.0	20.0	34.0
Effective Green, g (s)	14.0	28.0		4.0	18.0		8.0	23.0	23.0	5.0	20.0	34.0
Actuated g/C Ratio	0.18	0.35		0.05	0.22		0.10	0.29	0.29	0.06	0.25	0.42
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	1191		172	756		343	1462	455	215	1271	772
v/s Ratio Prot	c0.18	c0.36		0.04	0.15		c0.08	c0.21		0.06	0.16	0.07
v/s Ratio Perm									0.01			0.12
v/c Ratio	1.02	1.04		0.82	0.66		0.83	0.72	0.05	0.99	0.65	0.38
Uniform Delay, d1	33.0	26.0		37.6	28.2		35.3	25.6	20.6	37.5	26.9	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	41.8	38.1		25.3	2.1		14.8	3.1	0.2	56.9	2.6	0.3
Delay (s)	74.8	64.1		62.9	30.3		50.1	28.6	20.8	94.4	29.4	16.1
Level of Service	E	E		E	C		D	C	C	F	C	B
Approach Delay (s)		67.5			36.7			32.5			36.0	
Approach LOS		E			D			C			D	
Intersection Summary												
HCM Average Control Delay			46.3			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			78.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	500	15	220	272	95	30	995	230	140	831	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3524		1770	3402		1770	4942		1770	4939	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3524		1770	3402		1770	4942		1770	4939	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	318	543	16	239	296	103	33	1082	250	152	903	215
RTOR Reduction (vph)	0	2	0	0	39	0	0	35	0	0	36	0
Lane Group Flow (vph)	318	557	0	239	360	0	33	1297	0	152	1082	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.0	20.6		14.0	20.6		3.5	32.2		6.0	34.7	
Effective Green, g (s)	14.0	20.6		14.0	20.6		3.5	32.2		6.0	34.7	
Actuated g/C Ratio	0.15	0.22		0.15	0.22		0.04	0.35		0.06	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	267	782		267	755		67	1715		114	1847	
v/s Ratio Prot	c0.18	c0.16		0.14	0.11		0.02	c0.26		c0.09	0.22	
v/s Ratio Perm												
v/c Ratio	1.19	0.71		0.90	0.48		0.49	0.76		1.33	0.59	
Uniform Delay, d1	39.4	33.4		38.7	31.4		43.8	26.8		43.4	23.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	116.9	3.1		29.3	0.5		5.6	3.2		197.9	1.4	
Delay (s)	156.3	36.4		67.9	31.9		49.4	30.0		241.3	24.7	
Level of Service	F	D		E	C		D	C		F	C	
Approach Delay (s)		79.9			45.4			30.5			50.6	
Approach LOS		E			D			C			D	
Intersection Summary												
HCM Average Control Delay			49.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			92.8			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			75.6%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	22	15	11	17	35	19	1171	11	68	827	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Flt Protected	1.00	0.94		1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1751		1770	1673		1770	3534		1770	3539	1583
Satd. Flow (perm)	1770	1751		1770	1673		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	24	16	12	18	38	21	1273	12	74	899	124
RTOR Reduction (vph)	0	14	0	0	36	0	0	0	0	0	0	55
Lane Group Flow (vph)	60	26	0	12	20	0	21	1285	0	74	899	69
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.1	6.1		4.0	4.0		0.7	33.6		3.3	36.2	36.2
Effective Green, g (s)	6.1	6.1		4.0	4.0		0.7	33.6		3.3	36.2	36.2
Actuated g/C Ratio	0.09	0.09		0.06	0.06		0.01	0.52		0.05	0.56	0.56
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	166	164		109	103		19	1827		90	1971	882
v/s Ratio Prot	c0.03	0.01		0.01	c0.01		0.01	c0.36		c0.04	c0.25	
v/s Ratio Perm												0.04
v/c Ratio	0.36	0.16		0.11	0.20		1.11	0.70		0.82	0.46	0.08
Uniform Delay, d1	27.6	27.1		28.8	29.0		32.1	11.9		30.6	8.6	6.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.4		0.4	0.9		242.0	2.3		42.9	0.8	0.2
Delay (s)	29.0	27.5		29.3	29.9		274.2	14.2		73.4	9.3	6.8
Level of Service	C	C		C	C		F	B		E	A	A
Approach Delay (s)		28.4			29.8			18.4			13.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			57.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	10	296	22	4	63	336	1000	29	72	503	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Flt Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3378	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3378	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	11	322	24	4	68	365	1087	32	78	547	239
RTOR Reduction (vph)	0	0	271	0	0	61	0	2	0	0	43	0
Lane Group Flow (vph)	91	11	51	24	4	7	365	1117	0	78	743	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	6.9	14.0	14.0	1.6	8.7	8.7	21.7	47.6		6.9	32.8	
Effective Green, g (s)	6.9	14.0	14.0	1.6	8.7	8.7	21.7	47.6		6.9	32.8	
Actuated g/C Ratio	0.08	0.16	0.16	0.02	0.10	0.10	0.25	0.54		0.08	0.37	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	296	252	32	184	156	436	1904		139	1258	
v/s Ratio Prot	c0.05	0.01		0.01	0.00		c0.21	c0.32		0.04	0.22	
v/s Ratio Perm			c0.03			0.00						
v/c Ratio	0.65	0.04	0.20	0.75	0.02	0.04	0.84	0.59		0.56	0.59	
Uniform Delay, d1	39.4	31.3	32.2	43.1	35.9	35.9	31.5	13.6		39.1	22.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	0.1	0.4	65.2	0.0	0.1	13.1	1.3		5.1	2.0	
Delay (s)	50.0	31.4	32.6	108.2	35.9	36.0	44.6	15.0		44.2	24.3	
Level of Service	D	C	C	F	D	D	D	B		D	C	
Approach Delay (s)		36.3			54.1			22.3			26.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			88.1				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			62.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Cumulative Projects PM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	858	915	267	1104	0	0	0	0	350	0	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1456	1687	3374					1603	1603	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1456	1687	3374					1603	1603	1509
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83
Adj. Flow (vph)	0	894	953	322	1240	0	0	0	0	393	0	130
RTOR Reduction (vph)	0	0	379	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	894	574	322	1240	0	0	0	0	196	197	85
Confl. Peds. (#/hr)			7									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type		Perm		Prot						Split		custom
Protected Phases		2		1	6					4	4	4
Permitted Phases			2									4
Actuated Green, G (s)		37.6	37.6	18.6	51.5					15.0	15.0	24.5
Effective Green, g (s)		37.6	37.6	18.6	51.5					15.0	15.0	24.5
Actuated g/C Ratio		0.44	0.44	0.22	0.61					0.18	0.18	0.29
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1492	644	369	2044					283	283	435
v/s Ratio Prot		0.26		c0.19	0.37					0.12	c0.12	0.06
v/s Ratio Perm			c0.39									
v/c Ratio		0.60	0.89	0.87	0.61					0.69	0.70	0.20
Uniform Delay, d1		18.0	21.8	32.1	10.4					32.8	32.9	22.8
Progression Factor		1.00	1.00	1.18	1.11					1.00	1.00	1.00
Incremental Delay, d2		1.8	17.0	16.4	1.0					7.1	7.3	0.2
Delay (s)		19.8	38.8	54.4	12.7					40.0	40.1	23.0
Level of Service		B	D	D	B					D	D	C
Approach Delay (s)		29.6			21.3			0.0			35.8	
Approach LOS		C			C			A			D	
Intersection Summary												
HCM Average Control Delay			27.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			93.4%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

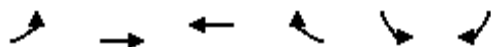
Existing+Cumulative Projects PM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	1029	0	0	772	425	599	5	270	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1485	1603	1609	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1485	1603	1609	1509			
Peak-hour factor, PHF	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86	0.92	0.92	0.92
Adj. Flow (vph)	216	1118	0	0	919	452	631	8	314	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	250	0	0	64	0	0	0
Lane Group Flow (vph)	216	1118	0	0	919	202	322	317	250	0	0	0
Confl. Peds. (#/hr)						3						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	10.9	53.0			37.9	37.9	22.4	22.4	22.4			
Effective Green, g (s)	10.9	53.0			37.9	37.9	22.4	22.4	22.4			
Actuated g/C Ratio	0.13	0.62			0.45	0.45	0.26	0.26	0.26			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	420	2104			1504	662	422	424	398			
v/s Ratio Prot	0.07	c0.33			c0.27		c0.20	0.20				
v/s Ratio Perm						0.14			0.17			
v/c Ratio	0.51	0.53			0.61	0.30	0.76	0.75	0.63			
Uniform Delay, d1	34.6	9.0			17.9	15.1	28.9	28.7	27.6			
Progression Factor	1.55	0.95			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.9	0.8			0.7	0.3	8.0	7.1	3.1			
Delay (s)	54.6	9.4			18.7	15.4	36.8	35.8	30.7			
Level of Service	D	A			B	B	D	D	C			
Approach Delay (s)		16.7			17.6			34.5			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			21.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			93.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	57	112	199	34	93	207
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	122	216	37	101	225
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	184	253	326			
Volume Left (vph)	62	0	101			
Volume Right (vph)	122	37	0			
Hadj (s)	-0.30	-0.05	0.10			
Departure Headway (s)	5.0	4.7	4.8			
Degree Utilization, x	0.25	0.33	0.43			
Capacity (veh/h)	658	725	719			
Control Delay (s)	9.7	10.1	11.4			
Approach Delay (s)	9.7	10.1	11.4			
Approach LOS	A	B	B			
Intersection Summary						
Delay			10.6			
HCM Level of Service			B			
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	190	181	300	13	23	162
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	207	197	326	14	25	176
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	207	197	326	14	25	176
Volume Left (vph)	207	0	0	0	25	0
Volume Right (vph)	0	0	0	14	0	176
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	6.0	5.5	5.6	4.9	6.9	5.7
Degree Utilization, x	0.35	0.30	0.51	0.02	0.05	0.28
Capacity (veh/h)	573	628	620	693	486	586
Control Delay (s)	11.0	9.7	13.2	6.8	9.0	9.6
Approach Delay (s)	10.4		12.9		9.5	
Approach LOS	B		B		A	
Intersection Summary						
Delay			11.1			
HCM Level of Service			B			
Intersection Capacity Utilization			39.6%		ICU Level of Service	A
Analysis Period (min)			15			

Existing+Cumulative Projects PM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	570	10	25	290	10	5	10	20	10	20	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.92		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	1858		1770	1863	1583		1706		1770	1612	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	1858		1770	1863	1583		1706		1770	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	620	11	27	315	11	5	11	22	11	22	192
RTOR Reduction (vph)	0	1	0	0	0	6	0	17	0	0	150	0
Lane Group Flow (vph)	200	630	0	27	315	5	0	21	0	11	64	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	10.0	28.8		1.6	20.4	38.4		18.0		18.0	18.0	
Effective Green, g (s)	10.0	28.8		1.6	20.4	38.4		18.0		18.0	18.0	
Actuated g/C Ratio	0.12	0.35		0.02	0.25	0.47		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	215	649		34	461	815		373		387	352	
v/s Ratio Prot	c0.11	c0.34		0.02	0.17	0.00		c0.01		0.01	c0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.93	0.97		0.79	0.68	0.01		0.06		0.03	0.18	
Uniform Delay, d1	35.9	26.4		40.2	28.1	11.8		25.5		25.3	26.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	42.3	28.9		75.1	8.0	0.0		0.3		0.1	1.1	
Delay (s)	78.1	55.3		115.3	36.1	11.8		25.8		25.5	27.3	
Level of Service	E	E		F	D	B		C		C	C	
Approach Delay (s)		60.8			41.4			25.8			27.2	
Approach LOS		E			D			C			C	
Intersection Summary												
HCM Average Control Delay			49.9			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			82.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			55.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	79	40	355	152	30	610
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	43	386	165	33	663
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			129		1045	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			129		1045	108
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			74		82	30
cM capacity (veh/h)			1456		186	946
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	129	551	696			
Volume Left	0	386	33			
Volume Right	43	0	663			
cSH	1700	1456	794			
Volume to Capacity	0.08	0.26	0.88			
Queue Length 95th (ft)	0	27	278			
Control Delay (s)	0.0	6.6	32.2			
Lane LOS		A	D			
Approach Delay (s)	0.0	6.6	32.2			
Approach LOS			D			
Intersection Summary						
Average Delay		18.9				
Intersection Capacity Utilization		80.4%		ICU Level of Service		D
Analysis Period (min)		15				

Existing+Cumulative Projects PM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	91	4	166	160	107	1	493	377	25	199	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1852		1770	1751		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1852		1770	1751		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	99	4	180	174	116	1	536	410	27	216	143
RTOR Reduction (vph)	0	2	0	0	28	0	0	0	188	0	0	72
Lane Group Flow (vph)	98	101	0	180	262	0	1	536	222	27	216	71
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	6.4	10.1		12.3	16.0		0.7	39.3	39.3	1.5	40.1	40.1
Effective Green, g (s)	6.4	10.1		12.3	16.0		0.7	39.3	39.3	1.5	40.1	40.1
Actuated g/C Ratio	0.08	0.12		0.15	0.20		0.01	0.48	0.48	0.02	0.49	0.49
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	140	230		268	345		15	902	766	33	920	782
v/s Ratio Prot	0.06	0.05		c0.10	c0.15		0.00	c0.29		c0.02	0.12	
v/s Ratio Perm									0.14			0.04
v/c Ratio	0.70	0.44		0.67	0.76		0.07	0.59	0.29	0.82	0.23	0.09
Uniform Delay, d1	36.5	32.9		32.5	30.8		39.9	15.2	12.6	39.7	11.8	10.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.2	1.3		6.5	9.2		1.9	2.9	1.0	84.2	0.6	0.2
Delay (s)	50.7	34.3		39.0	40.0		41.8	18.1	13.5	123.9	12.4	11.1
Level of Service	D	C		D	D		D	B	B	F	B	B
Approach Delay (s)		42.3			39.6			16.1			19.7	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX I

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING + CUMULATIVE + PROJECT

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Existing + Cuml Proj + Project AM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	513	10	270	642	580	0	0	616	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1601	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1601	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	558	11	293	698	630	0	0	670	402
RTOR Reduction (vph)	0	0	0	0	4	162	0	0	0	0	0	252
Lane Group Flow (vph)	0	0	0	301	293	102	698	630	0	0	670	150
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				26.5	26.5	26.5	19.8	62.3			37.3	37.3
Effective Green, g (s)				26.5	26.5	26.5	19.8	62.3			37.3	37.3
Actuated g/C Ratio				0.26	0.26	0.26	0.20	0.62			0.37	0.37
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				445	424	399	680	2205			1897	590
v/s Ratio Prot				0.18	c0.18		c0.20	0.18			c0.13	
v/s Ratio Perm						0.07						0.09
v/c Ratio				0.68	0.69	0.26	1.03	0.29			0.35	0.25
Uniform Delay, d1				32.9	33.1	29.0	40.1	8.6			22.6	21.7
Progression Factor				1.00	1.00	1.00	0.61	0.37			1.00	1.00
Incremental Delay, d2				4.0	4.8	0.3	35.0	0.2			0.5	1.0
Delay (s)				37.0	37.8	29.3	59.3	3.4			23.2	22.8
Level of Service				D	D	C	E	A			C	C
Approach Delay (s)		0.0			34.9			32.8			23.0	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			72.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
2: SR 78 EB Ramps &

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	140	741	0	0	0	0	957	446	220	909	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Frt	1.00	0.90	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1528	1504					3539	2787	3433	3539	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1528	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	152	805	0	0	0	0	1040	485	239	988	0
RTOR Reduction (vph)	0	40	40	0	0	0	0	0	313	0	0	0
Lane Group Flow (vph)	259	463	443	0	0	0	0	1040	172	239	988	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	37.3	37.3	37.3					35.5	35.5	10.8	51.6	
Effective Green, g (s)	37.3	37.3	37.3					35.5	35.5	10.8	51.6	
Actuated g/C Ratio	0.37	0.37	0.37					0.36	0.36	0.11	0.52	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	627	570	561					1256	989	371	1826	
v/s Ratio Prot	0.15	c0.30						c0.29		0.07	c0.28	
v/s Ratio Perm			0.29						0.06			
v/c Ratio	0.41	0.81	0.79					0.83	0.17	0.64	0.54	
Uniform Delay, d1	23.2	28.2	27.9					29.5	22.2	42.8	16.2	
Progression Factor	1.00	1.00	1.00					0.54	0.88	1.07	0.38	
Incremental Delay, d2	0.4	8.6	7.3					4.9	0.3	3.5	1.1	
Delay (s)	23.7	36.8	35.1					20.7	19.8	49.3	7.2	
Level of Service	C	D	D					C	B	D	A	
Approach Delay (s)		33.4			0.0			20.4			15.4	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM Average Control Delay			22.9					HCM Level of Service			C	
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		16.7		
Intersection Capacity Utilization			72.1%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	420	213	104	640	245	450	863	58	404	900	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4899	4899
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4899	4899
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	457	232	113	696	266	489	938	63	439	978	315
RTOR Reduction (vph)	0	0	155	0	0	168	0	0	25	0	58	0
Lane Group Flow (vph)	370	457	77	113	696	98	489	938	38	439	1235	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.7	33.0	33.0	5.0	26.3	26.3	11.0	29.0	29.0	13.0	31.0	31.0
Effective Green, g (s)	12.7	33.0	33.0	5.0	26.3	26.3	11.0	29.0	29.0	13.0	31.0	31.0
Actuated g/C Ratio	0.13	0.33	0.33	0.05	0.26	0.26	0.11	0.29	0.29	0.13	0.31	0.31
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	436	1168	522	172	931	416	378	1475	459	446	1519	1519
v/s Ratio Prot	c0.11	0.13		0.03	c0.20		c0.14	0.18		c0.13	c0.25	
v/s Ratio Perm			0.05			0.06			0.02			
v/c Ratio	0.85	0.39	0.15	0.66	0.75	0.24	1.29	0.64	0.08	0.98	0.81	0.81
Uniform Delay, d1	42.7	25.8	23.6	46.7	33.8	29.0	44.5	30.9	25.8	43.4	31.8	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	0.84	0.84
Incremental Delay, d2	14.2	0.2	0.1	8.7	3.3	0.3	150.6	2.1	0.4	33.4	3.9	3.9
Delay (s)	57.0	26.0	23.7	55.4	37.1	29.2	195.1	33.0	26.2	81.8	30.7	30.7
Level of Service	E	C	C	E	D	C	F	C	C	F	C	C
Approach Delay (s)		36.3			37.1			85.9			43.7	
Approach LOS		D			D			F			D	
Intersection Summary												
HCM Average Control Delay			52.6				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			19.0		
Intersection Capacity Utilization			79.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	396	5	56	5	5	5	183	855	5	70	1042	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1723		1770	3536		1770	3442	
Flt Permitted	0.75	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1399	1863	1583	1405	1723		1770	3536		1770	3442	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	5	61	5	5	5	199	929	5	76	1133	255
RTOR Reduction (vph)	0	0	42	0	3	0	0	1	0	0	21	0
Lane Group Flow (vph)	430	5	19	5	7	0	199	933	0	76	1367	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4			8			5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6		11.0	42.9		6.9	38.8	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6		11.0	42.9		6.9	38.8	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.12	0.47		0.08	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	443	589	501	445	545		215	1678		135	1477	
v/s Ratio Prot		0.00			0.00		c0.11	0.26		0.04	c0.40	
v/s Ratio Perm	c0.31		0.01	0.00								
v/c Ratio	0.97	0.01	0.04	0.01	0.01		0.93	0.56		0.56	0.93	
Uniform Delay, d1	30.5	21.2	21.4	21.2	21.2		39.3	17.0		40.3	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.0	0.0	0.0	0.0	0.0		40.9	1.3		5.3	11.3	
Delay (s)	65.5	21.2	21.4	21.2	21.2		80.2	18.3		45.6	35.7	
Level of Service	E	C	C	C	C		F	B		D	D	
Approach Delay (s)		59.6			21.2			29.2			36.3	
Approach LOS		E			C			C			D	
Intersection Summary												
HCM Average Control Delay			37.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			90.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			85.0%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	184	144	270	401	216	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	157	293	436	235	258
RTOR Reduction (vph)	0	125	0	0	0	113
Lane Group Flow (vph)	200	32	293	436	235	145
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	11.5	11.5	13.5	29.5	18.7	32.2
Effective Green, g (s)	11.5	11.5	13.5	29.5	18.7	32.2
Actuated g/C Ratio	0.20	0.20	0.24	0.52	0.33	0.56
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	375	318	418	961	579	1016
v/s Ratio Prot	0.11		c0.17	c0.23	c0.13	0.03
v/s Ratio Perm		0.02				0.06
v/c Ratio	0.53	0.10	0.70	0.45	0.41	0.14
Uniform Delay, d1	20.4	18.6	20.0	8.8	14.9	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	5.2	0.3	2.1	0.1
Delay (s)	21.9	18.8	25.2	9.1	17.0	6.0
Level of Service	C	B	C	A	B	A
Approach Delay (s)	20.5			15.6	11.3	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			15.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.49			
Actuated Cycle Length (s)			57.2		Sum of lost time (s)	9.0
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	22	0	0	259	11	205	151	0	386	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	24	0	0	282	12	223	164	0	420	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	836	830	210	480	666	111	420			387		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	836	830	210	480	666	111	420			387		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	69	99			100		
cM capacity (veh/h)	179	301	796	451	374	920	1136			1168		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	24	282	12	111	111	164	280	140				
Volume Left	0	0	12	0	0	0	0	0				
Volume Right	24	282	0	0	0	164	0	0				
cSH	796	920	1136	1700	1700	1700	1700	1700				
Volume to Capacity	0.03	0.31	0.01	0.07	0.07	0.10	0.16	0.08				
Queue Length 95th (ft)	2	33	1	0	0	0	0	0				
Control Delay (s)	9.7	10.6	8.2	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	9.7	10.6	0.2	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			28.4%	ICU Level of Service					A			
Analysis Period (min)			15									

Existing+Project+Cumulative Projects AM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	452	964	0	0	974	201	454	3	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1556		1775	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1556		1775	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	491	1048	0	0	1059	218	493	3	511	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	153	0	0	45	0	0	0
Lane Group Flow (vph)	491	1048	0	0	1059	65	0	496	466	0	0	0
Confl. Peds. (#/hr)			2			3	6					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	19.0	54.5			31.3	31.3		40.4	40.4			
Effective Green, g (s)	19.0	54.5			31.3	31.3		40.4	40.4			
Actuated g/C Ratio	0.18	0.52			0.30	0.30		0.38	0.38			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	621	2639			1516	464		683	609			
v/s Ratio Prot	c0.14	0.21			c0.21			0.28				
v/s Ratio Perm						0.04			c0.29			
v/c Ratio	0.79	0.40			0.70	0.14		0.73	0.77			
Uniform Delay, d1	41.1	15.3			32.7	27.0		27.6	28.2			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	6.8	0.4			2.7	0.6		6.6	8.9			
Delay (s)	47.9	15.7			35.4	27.6		34.2	37.1			
Level of Service	D	B			D	C		C	D			
Approach Delay (s)		26.0			34.0			35.7			0.0	
Approach LOS		C			C			D			A	
Intersection Summary												
HCM Average Control Delay			31.2			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			14.3			
Intersection Capacity Utilization			68.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Project+Cumulative Projects AM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	893	93	200	958	270	71	80	170	353	120	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99	0.85	1.00	1.00	0.85		0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1560	3433	5981	1258	1770	1863	1583		3182	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1560	3433	5981	1258	1770	1863	1583		3182	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	971	101	217	1041	293	77	87	185	384	130	709
RTOR Reduction (vph)	0	0	75	0	7	165	0	0	164	0	206	0
Lane Group Flow (vph)	121	971	26	217	1093	69	77	87	21	0	1017	0
Confl. Peds. (#/hr)			2			5						
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	6.0	28.1	28.1	10.3	32.4	32.4	12.7	12.7	12.7		40.0	
Effective Green, g (s)	6.0	28.1	28.1	10.3	32.4	32.4	12.7	12.7	12.7		40.0	
Actuated g/C Ratio	0.05	0.26	0.26	0.09	0.29	0.29	0.12	0.12	0.12		0.36	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	187	1299	399	321	1762	371	204	215	183		1157	
v/s Ratio Prot	0.04	c0.19		c0.06	0.18		0.04	c0.05			c0.32	
v/s Ratio Perm			0.02			0.05			0.01			
v/c Ratio	0.65	0.75	0.06	0.68	0.62	0.19	0.38	0.40	0.12		0.88	
Uniform Delay, d1	51.0	37.7	31.0	48.2	33.5	29.0	45.0	45.1	43.6		32.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	7.5	4.0	0.3	5.5	0.7	0.2	1.2	1.2	0.3		7.8	
Delay (s)	58.4	41.6	31.3	53.8	34.2	29.2	46.2	46.4	43.9		40.6	
Level of Service	E	D	C	D	C	C	D	D	D		D	
Approach Delay (s)		42.5			36.2			45.0			40.6	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			39.9			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			90.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	445	430	100	732	40	300	764	50	150	938	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.93		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3279		3433	3512		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3279		3433	3512		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	484	467	109	796	43	326	830	54	163	1020	613
RTOR Reduction (vph)	0	142	0	0	4	0	0	0	37	0	0	5
Lane Group Flow (vph)	228	809	0	109	835	0	326	830	17	163	1020	608
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	16.3	33.4		5.0	22.1		10.1	29.2	29.2	7.0	24.1	40.4
Effective Green, g (s)	16.3	33.4		5.0	22.1		10.1	29.2	29.2	7.0	24.1	40.4
Actuated g/C Ratio	0.18	0.36		0.05	0.24		0.11	0.32	0.32	0.08	0.26	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	3.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	604	1183		185	838		374	1603	499	260	1323	776
v/s Ratio Prot	0.07	0.25		0.03	c0.24		c0.09	0.16		0.05	0.20	c0.14
v/s Ratio Perm									0.01			0.25
v/c Ratio	0.38	0.68		0.59	1.00		0.87	0.52	0.03	0.63	0.77	0.78
Uniform Delay, d1	33.7	25.1		42.8	35.2		40.6	25.9	21.9	41.5	31.7	22.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.7		4.7	30.0		19.4	1.2	0.1	4.7	4.4	5.2
Delay (s)	34.1	26.8		47.5	65.3		60.0	27.1	22.1	46.2	36.1	27.5
Level of Service	C	C		D	E		E	C	C	D	D	C
Approach Delay (s)		28.2			63.2			35.8			34.1	
Approach LOS		C			E			D			C	
Intersection Summary												
HCM Average Control Delay			38.5			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			92.6			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			77.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	321	15	155	329	180	20	738	183	120	1205	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	0.95		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3516		1770	3351		1770	4934		1770	4940	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3516		1770	3351		1770	4934		1770	4940	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	349	16	168	358	196	22	802	199	130	1310	309
RTOR Reduction (vph)	0	4	0	0	83	0	0	39	0	0	34	0
Lane Group Flow (vph)	197	361	0	168	471	0	22	962	0	130	1585	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.6	19.6		12.0	19.0		1.5	32.2		9.0	39.7	
Effective Green, g (s)	12.6	19.6		12.0	19.0		1.5	32.2		9.0	39.7	
Actuated g/C Ratio	0.14	0.21		0.13	0.20		0.02	0.35		0.10	0.43	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	240	743		229	686		29	1712		172	2113	
v/s Ratio Prot	c0.11	0.10		0.09	c0.14		0.01	0.19		c0.07	c0.32	
v/s Ratio Perm												
v/c Ratio	0.82	0.49		0.73	0.69		0.76	0.56		0.76	0.75	
Uniform Delay, d1	39.0	32.2		38.9	34.1		45.5	24.6		40.8	22.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.7	0.5		11.5	2.9		71.7	1.3		17.1	2.5	
Delay (s)	58.7	32.7		50.4	37.0		117.2	25.9		57.9	24.9	
Level of Service	E	C		D	D		F	C		E	C	
Approach Delay (s)		41.8			40.1			27.9			27.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			92.8			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			74.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	21	27	16	47	75	22	791	7	28	1130	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Flt Protected	1.00	0.92		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1707		1770	1690		1770	3534		1770	3539	1583
Satd. Flow (perm)	1770	1707		1770	1690		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	23	29	17	51	82	24	860	8	30	1228	57
RTOR Reduction (vph)	0	26	0	0	74	0	0	1	0	0	0	29
Lane Group Flow (vph)	97	26	0	17	59	0	24	867	0	30	1228	28
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	7.2	7.2		6.3	6.3		1.3	30.1		1.8	30.6	30.6
Effective Green, g (s)	7.2	7.2		6.3	6.3		1.3	30.1		1.8	30.6	30.6
Actuated g/C Ratio	0.11	0.11		0.10	0.10		0.02	0.47		0.03	0.48	0.48
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	201	194		176	168		36	1678		50	1708	764
v/s Ratio Prot	c0.05	0.02		0.01	c0.03		0.01	0.25		c0.02	c0.35	
v/s Ratio Perm												0.02
v/c Ratio	0.48	0.14		0.10	0.35		0.67	0.52		0.60	0.72	0.04
Uniform Delay, d1	26.4	25.3		26.0	26.6		30.8	11.6		30.4	13.0	8.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.3		0.2	1.3		38.0	1.1		17.9	2.6	0.1
Delay (s)	28.2	25.6		26.2	27.9		68.8	12.7		48.3	15.6	8.7
Level of Service	C	C		C	C		E	B		D	B	A
Approach Delay (s)		27.3			27.7			14.2			16.1	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			63.4			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			54.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
12: W Citracado Pkwy & W Valley Pkwy

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	10	429	90	12	52	343	317	43	138	1037	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3476		1770	3514	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3476		1770	3514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	11	466	98	13	57	373	345	47	150	1127	57
RTOR Reduction (vph)	0	0	289	0	0	51	0	10	0	0	4	0
Lane Group Flow (vph)	153	11	177	98	13	6	373	382	0	150	1180	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.3	15.1	15.1	6.7	10.5	10.5	21.6	43.6		12.7	34.7	
Effective Green, g (s)	11.3	15.1	15.1	6.7	10.5	10.5	21.6	43.6		12.7	34.7	
Actuated g/C Ratio	0.12	0.16	0.16	0.07	0.11	0.11	0.22	0.45		0.13	0.36	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	293	249	123	204	173	398	1577		234	1269	
v/s Ratio Prot	c0.09	0.01		0.06	0.01		c0.21	0.11		0.08	c0.34	
v/s Ratio Perm			c0.11			0.00						
v/c Ratio	0.74	0.04	0.71	0.80	0.06	0.04	0.94	0.24		0.64	0.93	
Uniform Delay, d1	41.0	34.3	38.4	44.0	38.4	38.3	36.6	16.1		39.5	29.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.7	0.1	9.2	29.0	0.1	0.1	29.4	0.1		5.9	11.9	
Delay (s)	53.6	34.4	47.6	73.0	38.5	38.4	66.0	16.2		45.4	41.5	
Level of Service	D	C	D	E	D	D	E	B		D	D	
Approach Delay (s)		48.8			58.6			40.5			41.9	
Approach LOS		D			E			D			D	
Intersection Summary												
HCM Average Control Delay			44.0				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			96.1				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			75.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project AM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	585	692	127	1230	0	0	0	0	163	7	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		3374	1467	1687	3374					1603	1615	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		3374	1467	1687	3374					1603	1615	1509
Peak-hour factor, PHF	0.92	0.78	0.94	0.69	0.86	0.92	0.92	0.92	0.92	0.78	0.58	0.76
Adj. Flow (vph)	0	750	736	184	1430	0	0	0	0	209	12	101
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	750	736	184	1430	0	0	0	0	111	110	71
Confl. Peds. (#/hr)			11									
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type			Perm	Prot						Split		custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									4
Actuated Green, G (s)		46.0	46.0	13.6	55.6					11.6	11.6	20.4
Effective Green, g (s)		46.0	46.0	13.6	55.6					11.6	11.6	20.4
Actuated g/C Ratio		0.54	0.54	0.16	0.65					0.14	0.14	0.24
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1826	794	270	2207					219	220	362
v/s Ratio Prot		0.22		c0.11	0.42					c0.07	0.07	0.05
v/s Ratio Perm			c0.50									
v/c Ratio		0.41	0.93	0.68	0.65					0.51	0.50	0.20
Uniform Delay, d1		11.5	18.0	33.7	8.8					34.0	34.0	25.8
Progression Factor		1.00	1.00	1.10	1.11					1.00	1.00	1.00
Incremental Delay, d2		0.7	18.4	5.9	1.1					1.8	1.8	0.3
Delay (s)		12.2	36.4	43.1	10.9					35.9	35.8	26.0
Level of Service		B	D	D	B					D	D	C
Approach Delay (s)		24.2			14.6			0.0			32.8	
Approach LOS		C			B			A			C	
Intersection Summary												
HCM Average Control Delay			20.5		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			85.0		Sum of lost time (s)					13.8		
Intersection Capacity Utilization			95.7%		ICU Level of Service					F		
Analysis Period (min)			15									
c Critical Lane Group												

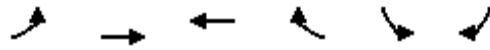
Existing + Cuml Proj + Project AM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	630	0	0	667	318	690	1	187	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1476	1603	1607	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1476	1603	1607	1509			
Peak-hour factor, PHF	0.82	0.80	0.92	0.92	0.88	0.88	0.83	0.25	0.74	0.92	0.92	0.92
Adj. Flow (vph)	144	788	0	0	758	361	831	4	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	214	0	0	104	0	0	0
Lane Group Flow (vph)	144	788	0	0	758	147	415	420	149	0	0	0
Confl. Peds. (#/hr)						7						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	9.1	47.9			34.6	34.6	27.5	27.5	27.5			
Effective Green, g (s)	9.1	47.9			34.6	34.6	27.5	27.5	27.5			
Actuated g/C Ratio	0.11	0.56			0.41	0.41	0.32	0.32	0.32			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	350	1901			1373	601	519	520	488			
v/s Ratio Prot	0.04	c0.23			c0.22		0.26	c0.26				
v/s Ratio Perm						0.10			0.10			
v/c Ratio	0.41	0.41			0.55	0.24	0.80	0.81	0.30			
Uniform Delay, d1	35.4	10.6			19.3	16.6	26.2	26.3	21.6			
Progression Factor	1.64	0.79			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.6			0.5	0.2	8.4	9.0	0.4			
Delay (s)	58.9	9.0			19.8	16.8	34.7	35.3	21.9			
Level of Service	E	A			B	B	C	D	C			
Approach Delay (s)		16.7			18.8			31.9			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			22.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			95.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	22	99	279	60	88	177
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	108	303	65	96	192
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	132	368	288			
Volume Left (vph)	24	0	96			
Volume Right (vph)	108	65	0			
Hadj (s)	-0.42	-0.07	0.10			
Departure Headway (s)	5.0	4.5	4.8			
Degree Utilization, x	0.18	0.46	0.38			
Capacity (veh/h)	645	771	725			
Control Delay (s)	9.1	11.4	10.7			
Approach Delay (s)	9.1	11.4	10.7			
Approach LOS	A	B	B			
Intersection Summary						
Delay			10.7			
HCM Level of Service			B			
Intersection Capacity Utilization			49.8%	ICU Level of Service	A	
Analysis Period (min)			15			



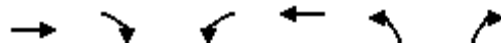
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	211	235	182	55	7	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	229	255	198	60	8	237
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	229	255	198	60	8	237
Volume Left (vph)	229	0	0	0	8	0
Volume Right (vph)	0	0	0	60	0	237
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	6.1	5.6	5.9	5.2	6.8	5.6
Degree Utilization, x	0.39	0.40	0.32	0.09	0.01	0.37
Capacity (veh/h)	568	623	584	655	491	597
Control Delay (s)	11.7	11.0	10.5	7.5	8.7	10.7
Approach Delay (s)	11.4		9.8		10.7	
Approach LOS	B		A		B	
Intersection Summary						
Delay			10.8			
HCM Level of Service			B			
Intersection Capacity Utilization			34.6%		ICU Level of Service	A
Analysis Period (min)			15			

Existing + Cuml Proj + Project AM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	260	19	85	431	5	31	70	201	5	34	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	1843		1770	1863	1583		1687		1770	1624	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	1843		1770	1863	1583		1687		1770	1624	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	283	21	92	468	5	34	76	218	5	37	218
RTOR Reduction (vph)	0	4	0	0	0	2	0	89	0	0	169	0
Lane Group Flow (vph)	125	300	0	92	468	3	0	239	0	5	86	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.0	23.2		5.6	22.8	40.8		18.0		18.0	18.0	
Effective Green, g (s)	6.0	23.2		5.6	22.8	40.8		18.0		18.0	18.0	
Actuated g/C Ratio	0.07	0.29		0.07	0.28	0.50		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	131	529		123	526	878		376		394	362	
v/s Ratio Prot	c0.07	0.16		0.05	c0.25	0.00		c0.14		0.00	c0.05	
v/s Ratio Perm						0.00						
v/c Ratio	0.95	0.57		0.75	0.89	0.00		0.63		0.01	0.24	
Uniform Delay, d1	37.3	24.5		36.9	27.8	9.9		28.4		24.5	25.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	64.1	4.4		21.7	19.8	0.0		7.9		0.1	1.5	
Delay (s)	101.3	28.9		58.6	47.5	9.9		36.4		24.5	27.3	
Level of Service	F	C		E	D	A		D		C	C	
Approach Delay (s)		50.0			49.0			36.4			27.2	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			43.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			80.8			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			74.3%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	135	23	529	94	37	368
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	25	575	102	40	400
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			172		1411	159
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			172		1411	159
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			59		55	55
cM capacity (veh/h)			1405		90	886
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	172	677	440			
Volume Left	0	575	40			
Volume Right	25	0	400			
cSH	1700	1405	490			
Volume to Capacity	0.10	0.41	0.90			
Queue Length 95th (ft)	0	51	253			
Control Delay (s)	0.0	8.5	48.6			
Lane LOS		A	E			
Approach Delay (s)	0.0	8.5	48.6			
Approach LOS			E			
Intersection Summary						
Average Delay		21.1				
Intersection Capacity Utilization		77.5%		ICU Level of Service		D
Analysis Period (min)		15				

Existing + Cuml Proj + Project AM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Volume (vph)	102	124	1	347	77	44	2	280	247	11	390	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1861		1770	1761		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1861		1770	1761		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	135	1	377	84	48	2	304	268	12	424	155
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	168	0	0	92
Lane Group Flow (vph)	111	136	0	377	108	0	2	304	100	12	424	63
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.8	8.9		20.2	21.3		0.6	28.6	28.6	0.6	28.6	28.6
Effective Green, g (s)	7.8	8.9		20.2	21.3		0.6	28.6	28.6	0.6	28.6	28.6
Actuated g/C Ratio	0.10	0.12		0.26	0.28		0.01	0.37	0.37	0.01	0.37	0.37
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	217		469	492		14	698	593	14	698	593
v/s Ratio Prot	0.06	c0.07		c0.21	0.06		0.00	0.16		c0.01	c0.23	
v/s Ratio Perm									0.06			0.04
v/c Ratio	0.61	0.63		0.80	0.22		0.14	0.44	0.17	0.86	0.61	0.11
Uniform Delay, d1	32.8	32.1		26.2	21.1		37.6	17.8	15.9	37.8	19.3	15.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	5.6		9.6	0.2		4.7	2.0	0.6	164.6	3.9	0.4
Delay (s)	38.8	37.7		35.8	21.3		42.3	19.8	16.5	202.4	23.2	15.9
Level of Service	D	D		D	C		D	B	B	F	C	B
Approach Delay (s)		38.2			32.1			18.4			24.9	
Approach LOS		D			C			B			C	

Intersection Summary

HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Existing + Cuml Proj + Project PM
1: SR 78 WB Ramps & Nordahl Rd

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	515	10	640	688	968	0	0	1058	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Lane Util. Factor				0.95	0.91	0.95	0.97	0.95			0.91	1.00
Frt				1.00	0.90	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.99	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1498	1504	3433	3539			5085	1583
Flt Permitted				0.95	0.99	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1498	1504	3433	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	560	11	696	748	1052	0	0	1150	598
RTOR Reduction (vph)	0	0	0	0	55	55	0	0	0	0	0	431
Lane Group Flow (vph)	0	0	0	442	366	349	748	1052	0	0	1150	167
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				32.3	32.3	32.3	23.4	56.5			27.9	27.9
Effective Green, g (s)				32.3	32.3	32.3	23.4	56.5			27.9	27.9
Actuated g/C Ratio				0.32	0.32	0.32	0.23	0.56			0.28	0.28
Clearance Time (s)				5.6	5.6	5.6	5.2	5.6			5.6	5.6
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				543	484	486	803	2000			1419	442
v/s Ratio Prot				c0.26	0.24		c0.22	0.30			c0.23	
v/s Ratio Perm						0.23						0.11
v/c Ratio				0.81	0.76	0.72	0.93	0.53			0.81	0.38
Uniform Delay, d1				31.1	30.3	29.8	37.5	13.5			33.6	29.1
Progression Factor				1.00	1.00	1.00	1.26	0.17			1.00	1.00
Incremental Delay, d2				9.1	6.6	5.0	7.4	0.3			5.1	2.4
Delay (s)				40.2	37.0	34.9	54.7	2.6			38.7	31.5
Level of Service				D	D	C	D	A			D	C
Approach Delay (s)		0.0			37.4			24.3			36.2	
Approach LOS		A			D			C			D	
Intersection Summary												
HCM Average Control Delay			32.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			88.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	375	60	546	0	0	0	0	1281	662	570	1003	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Lane Util. Factor	0.95	0.91	0.95					0.95	0.88	0.97	0.95	
Flt Protected	1.00	0.89	0.85					1.00	0.85	1.00	1.00	
Flt Permitted	0.95	0.99	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1508	1504					3539	2787	3433	3539	
Satd. Flow (perm)	1681	1508	1504					3539	2787	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	65	593	0	0	0	0	1392	720	620	1090	0
RTOR Reduction (vph)	0	58	58	0	0	0	0	0	362	0	0	0
Lane Group Flow (vph)	367	297	286	0	0	0	0	1392	358	620	1090	0
Turn Type	Split		Perm						Perm		Prot	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	28.4	28.4	28.4					38.4	38.4	16.8	60.4	
Effective Green, g (s)	28.4	28.4	28.4					38.4	38.4	16.8	60.4	
Actuated g/C Ratio	0.28	0.28	0.28					0.38	0.38	0.17	0.60	
Clearance Time (s)	5.6	5.6	5.6					5.6	5.6	5.2	5.6	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	477	428	427					1359	1070	577	2138	
v/s Ratio Prot	c0.22	0.20						c0.39		c0.18	0.31	
v/s Ratio Perm			0.19						0.13			
v/c Ratio	0.77	0.69	0.67					1.02	0.33	1.07	0.51	
Uniform Delay, d1	32.8	31.9	31.7					30.8	21.8	41.6	11.3	
Progression Factor	1.00	1.00	1.00					0.49	0.10	0.74	0.74	
Incremental Delay, d2	7.3	4.8	4.0					23.7	0.4	50.9	0.5	
Delay (s)	40.1	36.8	35.6					38.6	2.5	81.9	8.8	
Level of Service	D	D	D					D	A	F	A	
Approach Delay (s)		37.6			0.0			26.3			35.3	
Approach LOS		D			A			C			D	
Intersection Summary												
HCM Average Control Delay			31.9									
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			100.0									
Intersection Capacity Utilization			88.4%									
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project PM
3: E Mission Rd & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	800	358	40	430	500	396	1028	63	190	733	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4834	4834
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	4834	4834
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	870	389	43	467	543	430	1117	68	207	797	391
RTOR Reduction (vph)	0	0	202	0	0	141	0	0	23	0	91	0
Lane Group Flow (vph)	489	870	187	43	467	402	430	1117	45	207	1097	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.3	38.6	38.6	2.4	27.7	27.7	11.0	32.0	32.0	7.0	28.0	28.0
Effective Green, g (s)	13.3	38.6	38.6	2.4	27.7	27.7	11.0	32.0	32.0	7.0	28.0	28.0
Actuated g/C Ratio	0.13	0.39	0.39	0.02	0.28	0.28	0.11	0.32	0.32	0.07	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	457	1366	611	82	980	438	378	1627	507	240	1354	1354
v/s Ratio Prot	c0.14	0.25		0.01	0.13		c0.13	0.22		0.06	c0.23	
v/s Ratio Perm			0.12			c0.25			0.03			
v/c Ratio	1.07	0.64	0.31	0.52	0.48	0.92	1.14	0.69	0.09	0.86	0.81	0.81
Uniform Delay, d1	43.4	25.0	21.4	48.2	30.1	35.0	44.5	29.6	23.8	46.0	33.5	33.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.07	1.11	1.11
Incremental Delay, d2	62.1	1.0	0.3	5.9	0.4	23.9	89.2	2.4	0.3	22.5	4.5	4.5
Delay (s)	105.4	26.0	21.7	54.2	30.5	58.9	133.7	32.0	24.1	71.7	41.8	41.8
Level of Service	F	C	C	D	C	E	F	C	C	E	D	D
Approach Delay (s)		47.2			46.1			58.8			46.2	
Approach LOS		D			D			E			D	
Intersection Summary												
HCM Average Control Delay			50.0				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			76.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project PM
4: Country Club Dr & Auto Park Way

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	304	5	43	5	5	5	109	1003	5	80	886	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1723		1770	3537		1770	3373	
Flt Permitted	0.75	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1399	1863	1583	1405	1723		1770	3537		1770	3373	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	5	47	5	5	5	118	1090	5	87	963	440
RTOR Reduction (vph)	0	0	34	0	4	0	0	0	0	0	56	0
Lane Group Flow (vph)	330	5	13	5	6	0	118	1095	0	87	1347	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases	4				8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	23.7	23.7	23.7	23.7	23.7		8.6	44.3		7.4	43.1	
Effective Green, g (s)	23.7	23.7	23.7	23.7	23.7		8.6	44.3		7.4	43.1	
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27		0.10	0.51		0.08	0.49	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	379	505	429	381	467		174	1793		150	1663	
v/s Ratio Prot		0.00			0.00		c0.07	0.31		0.05	c0.40	
v/s Ratio Perm	c0.24		0.01	0.00								
v/c Ratio	0.87	0.01	0.03	0.01	0.01		0.68	0.61		0.58	0.81	
Uniform Delay, d1	30.4	23.3	23.4	23.3	23.3		38.1	15.4		38.5	18.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.1	0.0	0.0	0.0	0.0		10.0	1.6		5.4	4.4	
Delay (s)	49.5	23.3	23.4	23.3	23.3		48.1	16.9		43.9	23.1	
Level of Service	D	C	C	C	C		D	B		D	C	
Approach Delay (s)		45.9			23.3			20.0			24.3	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM Average Control Delay			25.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			87.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			77.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	344	292	325	260	193	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	317	353	283	210	573
RTOR Reduction (vph)	0	231	0	0	0	102
Lane Group Flow (vph)	374	86	353	283	210	471
Turn Type	Perm		Prot	pm+ov		
Protected Phases	4		3	8	2	3
Permitted Phases		4				2
Actuated Green, G (s)	16.6	16.6	15.1	36.2	16.3	31.4
Effective Green, g (s)	16.6	16.6	15.1	36.2	16.3	31.4
Actuated g/C Ratio	0.27	0.27	0.25	0.59	0.27	0.51
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	503	427	435	1097	469	924
v/s Ratio Prot	c0.20		c0.20	0.15	0.12	c0.13
v/s Ratio Perm		0.05				0.17
v/c Ratio	0.74	0.20	0.81	0.26	0.45	0.51
Uniform Delay, d1	20.5	17.3	21.9	6.1	18.8	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.2	11.0	0.1	3.1	0.4
Delay (s)	26.4	17.6	32.8	6.3	21.9	10.4
Level of Service	C	B	C	A	C	B
Approach Delay (s)	22.3			21.0	13.5	
Approach LOS	C			C	B	
Intersection Summary						
HCM Average Control Delay			18.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.71			
Actuated Cycle Length (s)			61.5		Sum of lost time (s)	13.5
Intersection Capacity Utilization			58.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	18	0	0	222	22	328	112	0	465	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	20	0	0	241	24	357	122	0	505	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	973	1032	253	677	910	178	505			478		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	973	1032	253	677	910	178	505			478		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	71	98			100		
cM capacity (veh/h)	144	226	747	324	267	834	1055			1080		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2				
Volume Total	20	241	24	178	178	122	337	168				
Volume Left	0	0	24	0	0	0	0	0				
Volume Right	20	241	0	0	0	122	0	0				
cSH	747	834	1055	1700	1700	1700	1700	1700				
Volume to Capacity	0.03	0.29	0.02	0.10	0.10	0.07	0.20	0.10				
Queue Length 95th (ft)	2	30	2	0	0	0	0	0				
Control Delay (s)	10.0	11.1	8.5	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B	A									
Approach Delay (s)	10.0	11.1	0.4				0.0					
Approach LOS	A	B										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			29.5%		ICU Level of Service					A		
Analysis Period (min)			15									

Existing+Project+Cumulative Projects PM
7: Valley Pkwy & I-15 NB Ramps

Harmony Grove Parcel
8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	813	1383	0	0	1172	373	351	1	430	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Lane Util. Factor	0.97	0.91			0.91	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	3433	5085			5085	1550		1774	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	3433	5085			5085	1550		1774	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	884	1503	0	0	1274	405	382	1	467	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	302	0	0	19	0	0	0
Lane Group Flow (vph)	884	1503	0	0	1274	103	0	383	448	0	0	0
Confl. Peds. (#/hr)						5	10					
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	27.9	58.9			26.8	26.8		36.0	36.0			
Effective Green, g (s)	27.9	58.9			26.8	26.8		36.0	36.0			
Actuated g/C Ratio	0.27	0.56			0.26	0.26		0.34	0.34			
Clearance Time (s)	4.2	5.5			5.5	5.5		4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	912	2852			1298	396		608	543			
v/s Ratio Prot	c0.26	0.30			c0.25			0.22				
v/s Ratio Perm						0.07			c0.28			
v/c Ratio	0.97	0.53			0.98	0.26		0.63	0.82			
Uniform Delay, d1	38.1	14.4			38.9	31.2		28.9	31.6			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	22.3	0.7			20.9	1.6		4.9	13.4			
Delay (s)	60.4	15.1			59.8	32.8		33.8	45.0			
Level of Service	E	B			E	C		C	D			
Approach Delay (s)		31.9			53.3			39.9			0.0	
Approach LOS		C			D			D			A	
Intersection Summary												
HCM Average Control Delay			40.6		HCM Level of Service						D	
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			105.0		Sum of lost time (s)						14.3	
Intersection Capacity Utilization			78.2%		ICU Level of Service						D	
Analysis Period (min)			15									
c Critical Lane Group												

Existing+Project+Cumulative Projects PM
8: Valley Pkwy & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	1605	121	270	843	410	83	70	330	261	150	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.81	0.81	1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97	0.85	1.00	1.00	0.85		0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	3433	5085	1549	3433	5872	1282	1770	1863	1561		3181	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	3433	5085	1549	3433	5872	1282	1770	1863	1561		3181	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	1745	132	293	916	446	90	76	359	284	163	463
RTOR Reduction (vph)	0	0	69	0	33	161	0	0	258	0	182	0
Lane Group Flow (vph)	111	1745	63	293	1084	84	90	76	101	0	728	0
Confl. Peds. (#/hr)			8						1			2
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			
Actuated Green, G (s)	7.5	32.7	32.7	12.6	37.8	37.8	14.0	14.0	14.0		31.8	
Effective Green, g (s)	7.5	32.7	32.7	12.6	37.8	37.8	14.0	14.0	14.0		31.8	
Actuated g/C Ratio	0.07	0.30	0.30	0.11	0.34	0.34	0.13	0.13	0.13		0.29	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5	5.5	4.6	4.6	4.6		4.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	234	1512	460	393	2018	441	225	237	199		920	
v/s Ratio Prot	0.03	c0.34		c0.09	0.18		0.05	0.04			c0.23	
v/s Ratio Perm			0.04			0.07			c0.06			
v/c Ratio	0.47	1.15	0.14	0.75	0.54	0.19	0.40	0.32	0.51		0.79	
Uniform Delay, d1	49.4	38.6	28.3	47.1	29.1	25.4	44.1	43.7	44.8		36.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.5	77.3	0.6	7.5	0.3	0.2	1.2	0.8	2.0		4.7	
Delay (s)	50.9	116.0	28.9	54.7	29.3	25.6	45.3	44.5	46.8		40.7	
Level of Service	D	F	C	D	C	C	D	D	D		D	
Approach Delay (s)		106.6			33.3			46.2			40.7	
Approach LOS		F			C			D			D	
Intersection Summary												
HCM Average Control Delay			64.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			18.9			
Intersection Capacity Utilization			91.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	564	882	300	130	355	180	260	985	70	195	805	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3405		3433	3360		3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3405		3433	3360		3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	613	959	326	141	386	196	283	1071	76	212	875	348
RTOR Reduction (vph)	0	42	0	0	80	0	0	0	54	0	0	53
Lane Group Flow (vph)	613	1243	0	141	502	0	283	1071	22	212	875	295
Turn Type	Prot			Prot			Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	14.0	28.0		4.0	18.0		8.0	23.0	23.0	5.0	20.0	34.0
Effective Green, g (s)	14.0	28.0		4.0	18.0		8.0	23.0	23.0	5.0	20.0	34.0
Actuated g/C Ratio	0.18	0.35		0.05	0.22		0.10	0.29	0.29	0.06	0.25	0.42
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	1192		172	756		343	1462	455	215	1271	772
v/s Ratio Prot	c0.18	c0.37		0.04	0.15		c0.08	c0.21		0.06	0.17	0.07
v/s Ratio Perm									0.01			0.12
v/c Ratio	1.02	1.04		0.82	0.66		0.83	0.73	0.05	0.99	0.69	0.38
Uniform Delay, d1	33.0	26.0		37.6	28.2		35.3	25.7	20.6	37.5	27.2	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	41.8	38.0		25.3	2.2		14.8	3.3	0.2	56.9	3.1	0.3
Delay (s)	74.8	64.0		62.9	30.5		50.1	29.0	20.8	94.4	30.2	16.1
Level of Service	E	E		E	C		D	C	C	F	C	B
Approach Delay (s)		67.5			36.8			32.8			36.3	
Approach LOS		E			D			C			D	
Intersection Summary												
HCM Average Control Delay			46.2			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			78.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	296	501	15	261	275	95	30	1015	248	140	878	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3524		1770	3403		1770	4935		1770	4941	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3524		1770	3403		1770	4935		1770	4941	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	322	545	16	284	299	103	33	1103	270	152	954	222
RTOR Reduction (vph)	0	2	0	0	37	0	0	39	0	0	35	0
Lane Group Flow (vph)	322	559	0	284	365	0	33	1334	0	152	1141	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	20.8		15.0	20.8		2.3	32.2		6.0	35.9	
Effective Green, g (s)	15.0	20.8		15.0	20.8		2.3	32.2		6.0	35.9	
Actuated g/C Ratio	0.16	0.22		0.16	0.22		0.02	0.34		0.06	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	282	780		282	753		43	1691		113	1887	
v/s Ratio Prot	c0.18	c0.16		0.16	0.11		0.02	c0.27		c0.09	c0.23	
v/s Ratio Perm												
v/c Ratio	1.14	0.72		1.01	0.48		0.77	0.79		1.35	0.60	
Uniform Delay, d1	39.5	33.9		39.5	31.9		45.6	27.8		44.0	23.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	97.5	3.1		55.4	0.5		56.1	3.8		202.8	1.4	
Delay (s)	137.0	37.0		94.9	32.4		101.7	31.7		246.8	24.8	
Level of Service	F	D		F	C		F	C		F	C	
Approach Delay (s)		73.5			58.3			33.3			50.2	
Approach LOS		E			E			C			D	
Intersection Summary												
HCM Average Control Delay			50.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			94.0			Sum of lost time (s)			25.0			
Intersection Capacity Utilization			78.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	22	15	11	17	35	19	1202	11	68	899	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Flt Protected	1.00	0.94		1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1751		1770	1673		1770	3534		1770	3539	1583
Satd. Flow (perm)	1770	1751		1770	1673		1770	3534		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	24	16	12	18	38	21	1307	12	74	977	141
RTOR Reduction (vph)	0	14	0	0	36	0	0	0	0	0	0	63
Lane Group Flow (vph)	67	26	0	12	20	0	21	1319	0	74	977	78
Turn Type	Split			Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.3	6.3		4.0	4.0		0.7	33.4		3.3	36.0	36.0
Effective Green, g (s)	6.3	6.3		4.0	4.0		0.7	33.4		3.3	36.0	36.0
Actuated g/C Ratio	0.10	0.10		0.06	0.06		0.01	0.51		0.05	0.55	0.55
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	172	170		109	103		19	1816		90	1960	877
v/s Ratio Prot	c0.04	0.01		0.01	c0.01		0.01	c0.37		c0.04	c0.28	
v/s Ratio Perm												0.05
v/c Ratio	0.39	0.15		0.11	0.20		1.11	0.73		0.82	0.50	0.09
Uniform Delay, d1	27.5	26.9		28.8	29.0		32.1	12.3		30.6	8.9	6.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4		0.4	0.9		242.0	2.6		42.9	0.9	0.2
Delay (s)	29.0	27.3		29.3	29.9		274.2	14.8		73.4	9.8	7.0
Level of Service	C	C		C	C		F	B		E	A	A
Approach Delay (s)		28.4			29.8			18.9			13.5	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			17.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			58.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	10	319	22	4	63	390	1000	29	72	503	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Flt Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.94	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3344	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3524		1770	3344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	11	347	24	4	68	424	1087	32	78	547	317
RTOR Reduction (vph)	0	0	289	0	0	62	0	2	0	0	76	0
Lane Group Flow (vph)	125	11	58	24	4	6	424	1117	0	78	788	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	9.2	15.0	15.0	1.5	7.3	7.3	24.5	47.9		7.0	30.4	
Effective Green, g (s)	9.2	15.0	15.0	1.5	7.3	7.3	24.5	47.9		7.0	30.4	
Actuated g/C Ratio	0.10	0.17	0.17	0.02	0.08	0.08	0.27	0.54		0.08	0.34	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	182	313	266	30	152	129	485	1888		139	1137	
v/s Ratio Prot	c0.07	0.01		0.01	0.00		c0.24	0.32		0.04	c0.24	
v/s Ratio Perm			c0.04			0.00						
v/c Ratio	0.69	0.04	0.22	0.80	0.03	0.04	0.87	0.59		0.56	0.69	
Uniform Delay, d1	38.7	31.1	32.1	43.8	37.8	37.8	31.0	14.1		39.7	25.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.3	0.0	0.4	84.3	0.1	0.1	15.9	1.4		5.1	3.5	
Delay (s)	49.0	31.2	32.6	128.1	37.8	38.0	46.9	15.5		44.8	29.0	
Level of Service	D	C	C	F	D	D	D	B		D	C	
Approach Delay (s)		36.8			60.5			24.1			30.3	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM Average Control Delay			29.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			89.4			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			69.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Existing + Cuml Proj + Project PM
13: Auto Park Way & I-15 SB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	↑
Volume (vph)	0	861	932	267	1151	0	0	0	0	350	0	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					4.6	4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3374	1456	1687	3374					1603	1603	1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3374	1456	1687	3374					1603	1603	1509
Peak-hour factor, PHF	0.92	0.96	0.96	0.83	0.89	0.92	0.92	0.92	0.92	0.89	0.92	0.83
Adj. Flow (vph)	0	897	971	322	1293	0	0	0	0	393	0	130
RTOR Reduction (vph)	0	0	379	0	0	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	897	592	322	1293	0	0	0	0	196	197	91
Confl. Peds. (#/hr)			7									
Heavy Vehicles (%)	2%	7%	7%	7%	7%	2%	2%	2%	2%	7%	7%	7%
Turn Type			Perm	Prot						Split		custom
Protected Phases		2		1	6					4	4	4
Permitted Phases			2									4
Actuated Green, G (s)		37.6	37.6	18.6	51.5					15.0	15.0	24.5
Effective Green, g (s)		37.6	37.6	18.6	51.5					15.0	15.0	24.5
Actuated g/C Ratio		0.44	0.44	0.22	0.61					0.18	0.18	0.29
Clearance Time (s)		5.0	5.0	4.2	5.0					4.6	4.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1492	644	369	2044					283	283	435
v/s Ratio Prot		0.27		c0.19	0.38					0.12	c0.12	0.06
v/s Ratio Perm			c0.41									
v/c Ratio		0.60	0.92	0.87	0.63					0.69	0.70	0.21
Uniform Delay, d1		18.0	22.3	32.1	10.7					32.8	32.9	22.9
Progression Factor		1.00	1.00	1.17	1.10					1.00	1.00	1.00
Incremental Delay, d2		1.8	20.3	16.3	1.1					7.1	7.3	0.2
Delay (s)		19.8	42.6	53.7	12.9					40.0	40.1	23.2
Level of Service		B	D	D	B					D	D	C
Approach Delay (s)		31.7			21.1			0.0			35.8	
Approach LOS		C			C			A			D	
Intersection Summary												
HCM Average Control Delay			27.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)				13.8		
Intersection Capacity Utilization			115.1%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												

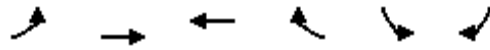
Existing + Cuml Proj + Project PM
14: Auto Park Way & I-15 NB Ramps

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	1032	0	0	778	425	640	5	270	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3273	3374			3374	1485	1603	1608	1509			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3273	3374			3374	1485	1603	1608	1509			
Peak-hour factor, PHF	0.83	0.92	0.92	0.92	0.84	0.94	0.95	0.63	0.86	0.92	0.92	0.92
Adj. Flow (vph)	216	1122	0	0	926	452	674	8	314	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	253	0	0	63	0	0	0
Lane Group Flow (vph)	216	1122	0	0	926	199	344	338	251	0	0	0
Confl. Peds. (#/hr)						3						
Heavy Vehicles (%)	7%	7%	2%	2%	7%	7%	7%	7%	7%	2%	2%	2%
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	10.9	52.3			37.2	37.2	23.1	23.1	23.1			
Effective Green, g (s)	10.9	52.3			37.2	37.2	23.1	23.1	23.1			
Actuated g/C Ratio	0.13	0.62			0.44	0.44	0.27	0.27	0.27			
Clearance Time (s)	4.2	5.0			5.0	5.0	4.6	4.6	4.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	420	2076			1477	650	436	437	410			
v/s Ratio Prot	0.07	c0.33			c0.27		c0.21	0.21				
v/s Ratio Perm						0.13			0.17			
v/c Ratio	0.51	0.54			0.63	0.31	0.79	0.77	0.61			
Uniform Delay, d1	34.6	9.4			18.5	15.5	28.7	28.5	27.0			
Progression Factor	1.56	0.94			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.9	0.9			0.8	0.3	9.2	8.3	2.7			
Delay (s)	54.9	9.8			19.4	15.8	37.9	36.8	29.7			
Level of Service	D	A			B	B	D	D	C			
Approach Delay (s)		17.0			18.2			34.9			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			22.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			14.6			
Intersection Capacity Utilization			115.1%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	57	115	229	34	103	276
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	125	249	37	112	300
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	187	286	412			
Volume Left (vph)	62	0	112			
Volume Right (vph)	125	37	0			
Hadj (s)	-0.30	-0.04	0.09			
Departure Headway (s)	5.3	4.9	4.9			
Degree Utilization, x	0.27	0.39	0.56			
Capacity (veh/h)	617	701	712			
Control Delay (s)	10.2	11.0	13.9			
Approach Delay (s)	10.2	11.0	13.9			
Approach LOS	B	B	B			
Intersection Summary						
Delay			12.2			
HCM Level of Service			B			
Intersection Capacity Utilization			54.6%	ICU Level of Service	A	
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	220	181	300	13	23	231
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	239	197	326	14	25	251
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	239	197	326	14	25	251
Volume Left (vph)	239	0	0	0	25	0
Volume Right (vph)	0	0	0	14	0	251
Hadj (s)	0.53	0.03	0.03	-0.67	0.53	-0.67
Departure Headway (s)	6.4	5.8	6.0	5.3	7.0	5.8
Degree Utilization, x	0.42	0.32	0.54	0.02	0.05	0.41
Capacity (veh/h)	545	592	582	644	479	578
Control Delay (s)	12.7	10.4	14.7	7.2	9.2	11.5
Approach Delay (s)	11.7		14.4		11.3	
Approach LOS	B		B		B	
Intersection Summary						
Delay			12.4			
HCM Level of Service			B			
Intersection Capacity Utilization			41.3%		ICU Level of Service	A
Analysis Period (min)			15			

Existing + Cuml Proj + Project PM
17: Harmony Grove Rd & Country Club Dr

Harmony Grove Parcel

8/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	570	35	246	290	10	16	40	114	10	89	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1770	1847		1770	1863	1583		1685		1770	1677	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1770	1847		1770	1863	1583		1685		1770	1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	620	38	267	315	11	17	43	124	11	97	192
RTOR Reduction (vph)	0	3	0	0	0	6	0	93	0	0	89	0
Lane Group Flow (vph)	200	655	0	267	315	5	0	91	0	11	200	0
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	10.0	24.0		4.0	18.0	36.0		18.0		18.0	18.0	
Effective Green, g (s)	10.0	24.0		4.0	18.0	36.0		18.0		18.0	18.0	
Actuated g/C Ratio	0.12	0.30		0.05	0.22	0.45		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	221	554		89	419	792		379		398	377	
v/s Ratio Prot	0.11	c0.35		c0.15	0.17	0.00		c0.05		0.01	c0.12	
v/s Ratio Perm						0.00						
v/c Ratio	0.90	1.18		3.00	0.75	0.01		0.24		0.03	0.53	
Uniform Delay, d1	34.5	28.0		38.0	28.9	12.1		25.4		24.2	27.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	35.6	99.6		929.4	11.8	0.0		1.5		0.1	5.3	
Delay (s)	70.1	127.6		967.4	40.7	12.1		26.9		24.3	32.5	
Level of Service	E	F		F	D	B		C		C	C	
Approach Delay (s)		114.2			457.4			26.9			32.2	
Approach LOS		F			F			C			C	
Intersection Summary												
HCM Average Control Delay			198.4			HCM Level of Service				F		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			79.6%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	79	50	440	152	33	647
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	54	478	165	36	703
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			140		1235	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		1235	113
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			67		72	25
cM capacity (veh/h)			1443		130	940
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	140	643	739			
Volume Left	0	478	36			
Volume Right	54	0	703			
cSH	1700	1443	722			
Volume to Capacity	0.08	0.33	1.02			
Queue Length 95th (ft)	0	37	444			
Control Delay (s)	0.0	7.3	63.5			
Lane LOS		A	F			
Approach Delay (s)	0.0	7.3	63.5			
Approach LOS			F			
Intersection Summary						
Average Delay			33.9			
Intersection Capacity Utilization			91.4%	ICU Level of Service		F
Analysis Period (min)			15			

Existing + Cuml Proj + Project PM
19: Harmony Grove Village Pkwy & Harmony Grove Rd

Harmony Grove Parcel

8/25/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	91	4	292	160	107	1	533	431	25	294	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1852		1770	1751		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1852		1770	1751		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	99	4	317	174	116	1	579	468	27	320	143
RTOR Reduction (vph)	0	2	0	0	28	0	0	0	200	0	0	80
Lane Group Flow (vph)	98	101	0	317	262	0	1	579	268	27	320	63
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.2	8.2		17.3	18.3		0.7	34.4	34.4	1.4	35.1	35.1
Effective Green, g (s)	7.2	8.2		17.3	18.3		0.7	34.4	34.4	1.4	35.1	35.1
Actuated g/C Ratio	0.09	0.10		0.22	0.23		0.01	0.43	0.43	0.02	0.44	0.44
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	161	192		386	404		16	808	687	31	825	701
v/s Ratio Prot	0.06	0.05		c0.18	c0.15		0.00	c0.31		c0.02	0.17	
v/s Ratio Perm									0.17			0.04
v/c Ratio	0.61	0.53		0.82	0.65		0.06	0.72	0.39	0.87	0.39	0.09
Uniform Delay, d1	34.7	33.7		29.5	27.6		39.0	18.4	15.3	38.9	14.9	12.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.4	2.6		13.1	3.6		1.6	5.4	1.7	108.3	1.4	0.3
Delay (s)	41.1	36.3		42.6	31.1		40.6	23.8	17.0	147.2	16.2	13.1
Level of Service	D	D		D	C		D	C	B	F	B	B
Approach Delay (s)		38.6			37.1			20.8			22.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX J

COUNTRY CLUB DRIVE DESIGN EXCEPTION REQUEST

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DEPARTMENT OF PUBLIC WORKS

Request for a Design Exception to a Road Standard and/or Modification to Project Conditions

Project Number: PDS 2015-TM-5600 Date of Request: February, 2016

Project Location: Country Club Drive at Cordrey Lane

Thos. Bros. Map/Grid: 1129 C6 APN: 235-011-06, 238-021-08, 238-021-09, 238-021-10

Requestor Name: Debby Reece Telephone: 619-235-6471

Address: 701 B Street, Suite 800, San Diego CA 92101

Requested Design Exception (attach engineering sketches showing existing layout, details and notes):
Requesting a design speed modification for a reduced design speed on Country Club Drive from 30 mph to 27.5 mph at the existing crest
vertical curve near the intersection of Cordrey Lane. Please see the attached profile and plan exhibits, depicting the proposed design of Country
Club Drive.

Reason for requested Design Exception (provide attachment if additional space is required):
The existing alignment and grade of Country Club Drive at Cordrey Lane is a crest vertical curve that does not meet the design speed of 30 mph.
The proposed project will be widening and improving Country Club Drive east of the intersection with Cordrey Lane. The existing vertical curve
is too short to meet a design speed of 30 mph, which is the design speed for the proposed Modified Residential Collector. The project will raise
the profile to the east and north, which will help to improve the algebraic difference in grade at the crest vertical curve. However, the goal of the
design is to match the grades at the Cordrey Lane intersection to minimize the offsite impacts to the adjacent property owners along the lane.
The project proposes to construct a 400-foot vertical curve at the crest, which will require a reduced speed of 27.5 mph.

List alternatives that could mitigate the requested Design Exception (attach engineering sketches showing proposed layouts, details and notes): See attached sheet.

Describe the hardship(s) to the property owner(s) and/or neighbor(s) if the request is not approved (see note 3. on reverse): The proposed design improves an existing condition that currently does not meet County standards. As described above
additional offsite improvements would occur if the crest vertical curve was improved to meet the standard. This would result in a lowering of the
existing ground which would increase the slope of Cordrey Lane approaching the intersection. The slope of Cordrey Lane at the intersection is
approximately 8.6%, with a residential driveway at nearly 20% at that location as well. Lowering of the crest vertical curve to meet the standard
on Country Club Drive would adversely affect access to this resident, just south of the existing intersection.

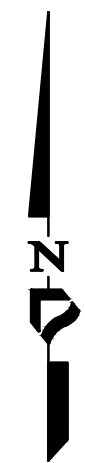
Provide Design and Cost Estimate for meeting the Condition (see note 3. on reverse): Following the standard vertical
curve length would require additional excavation of 14,360 cy, export of 14,780 cy, 470 LF of AC Berm, and additional 4,360 SF of AC removal,
new 3" AC, new 8" base, subgrade prep. All of these items, plus erosion protection measures result in an additional cost of approximately
\$441,295. This estimate does not take into account private utility relocations that may be required for the adjacent property owner on Cordrey Dr.

See reverse for directions and important information.

Request for a Design Exception to a Road Standard (p. 2) Harmony Grove Village South – Country Club Drive

List alternatives that could mitigate the requested Design Exception (attach engineering sketches showing proposed layouts, details and notes):

The alternative design that would mitigate the design exception would be to lengthen the vertical curve, thereby increasing the design speed for the roadway to 30 mph. This mitigation would revise the Country Club Drive profile, by lowering the elevation of the roadway at the crest vertical curve. This would have a negative impact and offsite ripple effect on the adjacent property owners, particularly the one located directly south of the intersection. The existing slope of Cordrey Lane would increase from approximately 8.6% to approximately 16% entering the intersection with Country Club Drive. In addition, the adjacent residential driveway would increase from approximately 20% to approximately 32%.



SCALE: 1"=100'

HARMONY GROVE VILLAGE SOUTH
COUNTRY CLUB DRIVE
DESIGN MODIFICATION EXHIBIT

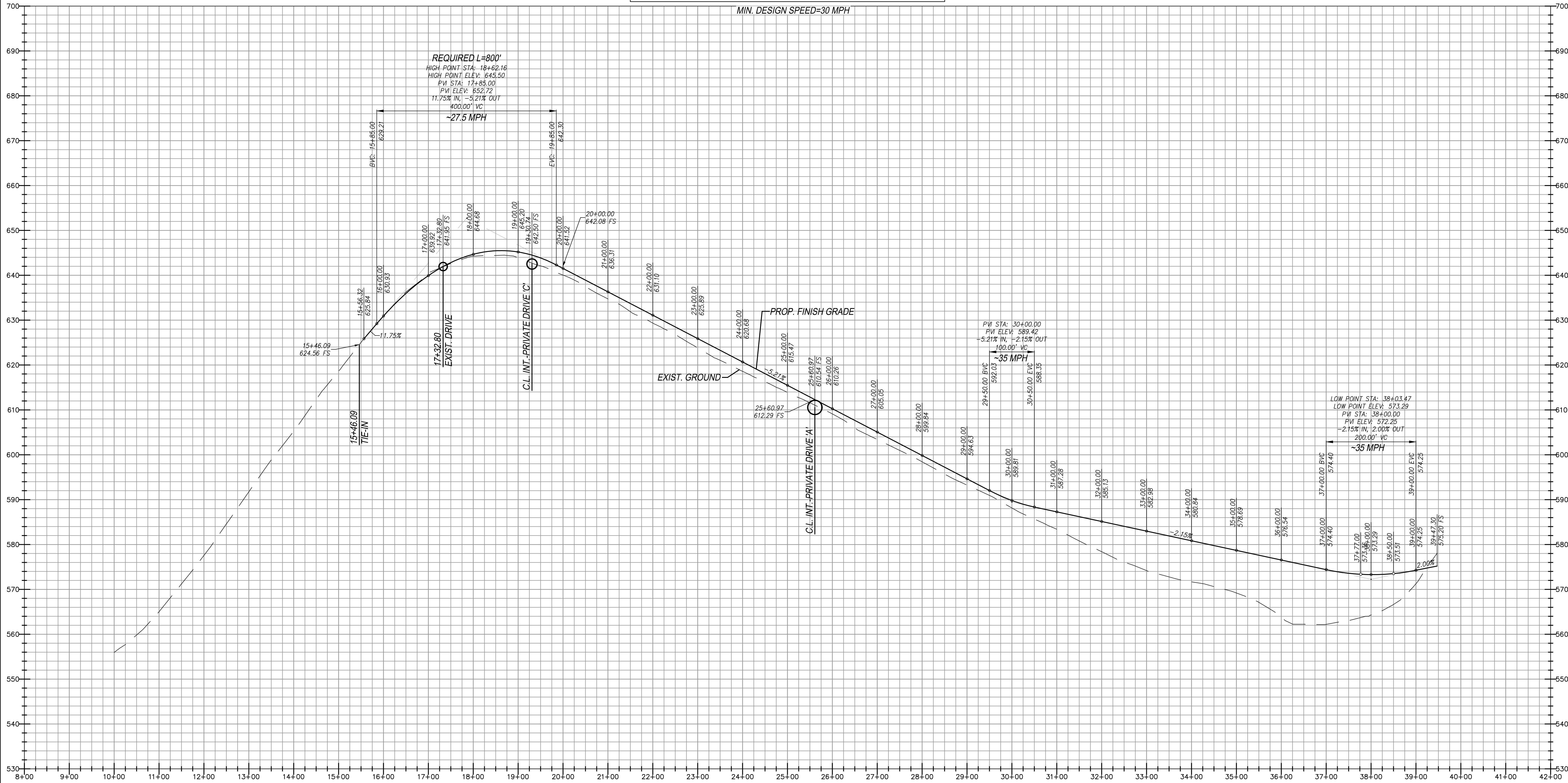
SHEET 2 OF 2



PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey

701 B Street, Suite 200
San Diego, CA 92101
619.235.6471 Tel
619.234.0349 Fax

PROFILE VIEW: 4095-COUNTRY CLUB DRIVE
SCALE: 10
DATUM: 530.00



SCALE:
HORIZ.: 1"=100'
VERT.: 1"=10'

HARMONY GROVE VILLAGE SOUTH
COUNTRY CLUB DRIVE
PROFILE EXHIBIT

APPENDIX K

POST-IMPROVEMENT INTERSECTION ANALYSIS WORKSHEETS

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Existing + Proj AM (Mitigated)
17: Country Club Dr & Harmony Grove Rd

Harmony Grove Parcel

1/19/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	202	12	84	383	2	26	66	197	2	31	127
Future Volume (vph)	48	202	12	84	383	2	26	66	197	2	31	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1847		1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1847		1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	220	13	91	416	2	28	72	214	2	34	138
RTOR Reduction (vph)	0	2	0	0	0	1	0	0	165	0	0	107
Lane Group Flow (vph)	52	231	0	91	416	1	28	72	49	2	34	31
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	3.1	20.3		6.8	24.0	42.0	18.0	18.0	18.0	18.0	18.0	18.0
Effective Green, g (s)	3.1	20.3		6.8	24.0	42.0	18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.04	0.26		0.09	0.30	0.53	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	69	474		152	565	920	402	423	360	402	423	360
v/s Ratio Prot	0.03	0.12		c0.05	c0.22	0.00	0.02	c0.04		0.00	0.02	
v/s Ratio Perm						0.00			0.03			c0.02
v/c Ratio	0.75	0.49		0.60	0.74	0.00	0.07	0.17	0.14	0.00	0.08	0.09
Uniform Delay, d1	37.6	25.0		34.8	24.7	8.7	24.0	24.5	24.3	23.6	24.0	24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.6	3.5		6.2	8.3	0.0	0.3	0.9	0.8	0.0	0.4	0.5
Delay (s)	74.2	28.5		41.1	33.0	8.7	24.3	25.4	25.1	23.6	24.4	24.6
Level of Service	E	C		D	C	A	C	C	C	C	C	C
Approach Delay (s)		36.9			34.4			25.1			24.5	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			31.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			79.1			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			41.6%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

17: Country Club Dr & Harmony Grove Rd

Mitigated

1/19/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	498	31	238	221	5	15	38	107	3	86	73
Future Volume (vph)	132	498	31	238	221	5	15	38	107	3	86	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1846		1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	541	34	259	240	5	16	41	116	3	93	79
RTOR Reduction (vph)	0	2	0	0	0	2	0	0	98	0	0	67
Lane Group Flow (vph)	143	573	0	259	240	3	16	41	18	3	93	12
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	8		4		4
Permitted Phases						6			8			4
Actuated Green, G (s)	14.3	46.0		20.3	52.0	70.0	18.0	18.0	18.0	18.0	18.0	18.0
Effective Green, g (s)	14.3	46.0		20.3	52.0	70.0	18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.12	0.39		0.17	0.44	0.59	0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	213	717		303	818	990	269	283	240	269	283	240
v/s Ratio Prot	0.08	c0.31		c0.15	0.13	0.00	0.01	c0.02		0.00	c0.05	
v/s Ratio Perm						0.00			0.01			0.01
v/c Ratio	0.67	0.80		0.85	0.29	0.00	0.06	0.14	0.07	0.01	0.33	0.05
Uniform Delay, d1	49.8	32.1		47.6	21.3	9.9	42.9	43.5	43.0	42.6	44.8	42.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	9.1		20.3	0.9	0.0	0.4	1.1	0.6	0.1	3.1	0.4
Delay (s)	57.8	41.1		67.9	22.2	9.9	43.3	44.6	43.6	42.7	47.8	43.2
Level of Service	E	D		E	C	A	D	D	D	D	D	D
Approach Delay (s)		44.5			45.6			43.8			45.7	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			44.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			118.3				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			58.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

17: Country Club Dr & Harmony Grove Rd
HCM Signalized Intersection Capacity Analysis

Mitigated
1/19/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	260	19	85	431	5	31	70	201	5	34	201
Future Volume (vph)	115	260	19	85	431	5	31	70	201	5	34	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1843		1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1843		1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	283	21	92	468	5	34	76	218	5	37	218
RTOR Reduction (vph)	0	4	0	0	0	4	0	0	150	0	0	169
Lane Group Flow (vph)	125	300	0	92	468	1	34	76	68	5	37	49
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	6.0	21.2		6.8	22.0	22.0	18.0	18.0	24.8	18.0	18.0	18.0
Effective Green, g (s)	6.0	21.2		6.8	22.0	22.0	18.0	18.0	24.8	18.0	18.0	18.0
Actuated g/C Ratio	0.08	0.26		0.08	0.28	0.28	0.22	0.22	0.31	0.22	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	132	488		150	512	435	398	419	569	398	419	356
v/s Ratio Prot	c0.07	0.16		0.05	c0.25		0.02	c0.04	0.01	0.00	0.02	
v/s Ratio Perm						0.00			0.03			c0.03
v/c Ratio	0.95	0.62		0.61	0.91	0.00	0.09	0.18	0.12	0.01	0.09	0.14
Uniform Delay, d1	36.8	25.8		35.3	28.1	21.0	24.5	25.0	19.8	24.1	24.5	24.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	61.5	5.7		7.2	23.3	0.0	0.4	0.9	0.1	0.1	0.4	0.8
Delay (s)	98.4	31.5		42.6	51.4	21.1	24.9	26.0	19.9	24.2	24.9	25.6
Level of Service	F	C		D	D	C	C	C	B	C	C	C
Approach Delay (s)		51.0			49.7			21.8			25.5	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			40.3			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			48.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

17: Country Club Dr & Harmony Grove Rd
HCM Signalized Intersection Capacity Analysis

Mitigated
1/19/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	570	35	246	290	10	16	40	114	10	89	177
Future Volume (vph)	184	570	35	246	290	10	16	40	114	10	89	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1847		1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1847		1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	620	38	267	315	11	17	43	124	11	97	192
RTOR Reduction (vph)	0	2	0	0	0	5	0	0	85	0	0	163
Lane Group Flow (vph)	200	656	0	267	315	6	17	43	39	11	97	29
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	5	2		1	6	4	8	8	1	4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	18.2	48.0		19.6	49.4	67.4	18.0	18.0	37.6	18.0	18.0	18.0
Effective Green, g (s)	18.2	48.0		19.6	49.4	67.4	18.0	18.0	37.6	18.0	18.0	18.0
Actuated g/C Ratio	0.15	0.40		0.16	0.41	0.56	0.15	0.15	0.31	0.15	0.15	0.15
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	269	741		290	769	945	266	280	550	266	280	238
v/s Ratio Prot	0.11	c0.36		c0.15	0.17	0.00	0.01	c0.02	0.01	0.01	c0.05	
v/s Ratio Perm						0.00			0.01			0.02
v/c Ratio	0.74	0.89		0.92	0.41	0.01	0.06	0.15	0.07	0.04	0.35	0.12
Uniform Delay, d1	48.5	33.2		49.2	24.8	11.4	43.6	44.2	28.8	43.4	45.5	44.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.6	14.6		32.8	1.6	0.0	0.5	1.2	0.1	0.3	3.4	1.0
Delay (s)	59.1	47.9		82.0	26.4	11.4	44.0	45.3	28.8	43.7	48.9	45.0
Level of Service	E	D		F	C	B	D	D	C	D	D	D
Approach Delay (s)		50.5			51.2			34.1			46.2	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay		48.5										
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		119.6										
Intersection Capacity Utilization		63.3%										
Analysis Period (min)		15										
c Critical Lane Group												

APPENDIX L

EXISTING RIGHT-OF-WAY OPTION MEMORANDA

October 2, 2017

RCS Harmony Partners
2305 Historic Decatur Road, Suite 100
San Diego, CA 92106

LLG Reference: 3-14-2314

Subject: **Harmony Grove Village South – Existing ROW Option**

At the request of County staff, this letter summarizes the operational capacity of road improvements to Country Club Drive, south of its intersection with Harmony Grove Road, designed within the current 50-foot right-of-way (“Existing ROW Option” or “The Option”).

BACKGROUND AND SCOPE

1. Within the full scope of its Application, Harmony Grove Village South (“The Project”) proposes a design configuration (“Preferred Configuration”) at this intersection that is believed superior to the Existing ROW Option as described above, in the former’s function as a vibrant village connector between the HGVS and HGV planning areas.

The Preferred Configuration would operate outside of the existing 50’ ROW but also provide a third lane as does The Option.

2. Specifically, this memo addresses:
 - a. The Option’s County roadway classification;
 - b. The intersection operations at Harmony Grove Road/Country Club Drive signalized intersection with The Option (No. 17 in the Traffic Impact Analysis (“TIA”); and
 - c. The Option’s ability to serve the forecasted Average Daily Traffic (“ADT”) on Country Club Drive.
3. The Existing ROW Option includes the following design components:
 - 2 x 5-foot sidewalks
 - 1 x 4-foot bike lane (northbound direction)
 - 2 x 12-foot travel lanes
 - 1 x 12-foot center turn lane

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Keil D. Maberry, PE

The profile of The Option is shown below in **Figure A**:

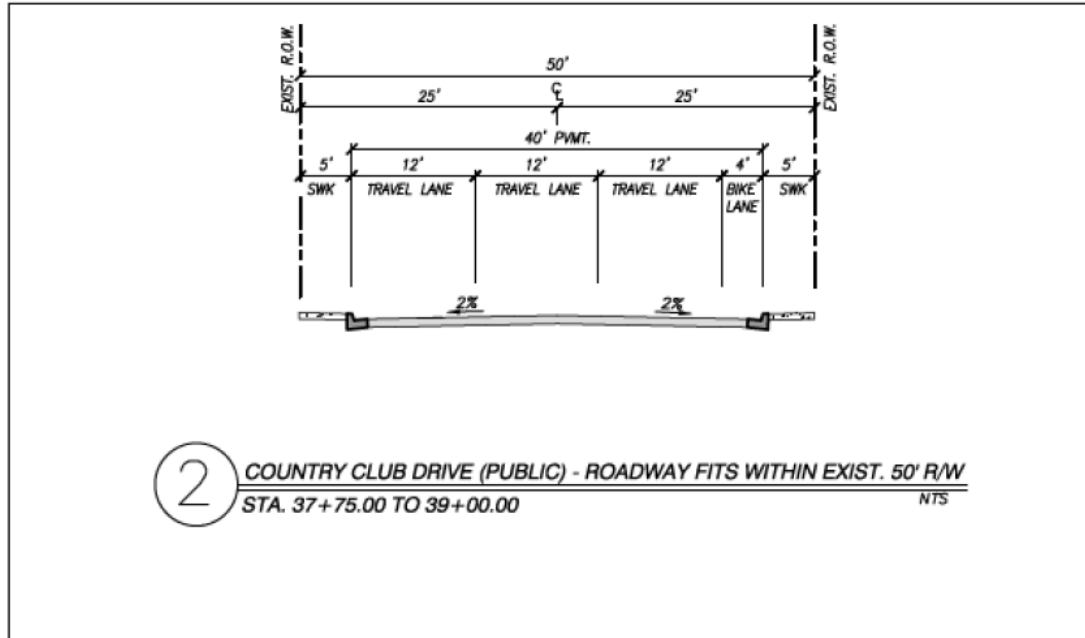


Figure A – 50' R/W (Existing Right-of-Way Option) Profile

ASSESSMENT

County of San Diego Roadway Classification

A review of the County's Public Road Standards indicates that from a ROW perspective, The Option roadway (40-feet of pavement width) could be considered similar to a Non-Mobility Element public roadway standard for “*Residential Collector*”, which provides two 12-foot travel lanes in 40 feet of pavement width and 60 feet of ROW. The published capacity for this two-lane roadway is 4,500 ADT at LOS C.

A 3-lane roadway segment section—same as the Preferred Configuration—is maintained in The Option, which improves the overall roadway's function for emergency ingress/egress. The third lane would also substantially increase capacity over that of a two-lane Residential Collector. For example, the County's published public road standards and roadway capacity tables show that a “*Light Collector with Continuous Left-Turn Lane (2.2B)*” roadway has a capacity of 9,500 ADT at LOS C, whereas the “*Light Collector – No Median (2.2E)*” roadway has a LOS C capacity of 7,100 ADT. The addition of the 3rd lane therefore increases capacity by 2,400 ADT, or 34%.

Table A shows a summary of the Public Roadway Standards and the increase in capacity afforded by the 3rd lane.

TABLE A
COMPARATIVE INCREASE IN LOS CAPACITY WITH CONTINUOUS (TWO-WAY) LEFT TURN LANE
FOR COUNTY MOBILITY ELEMENT ROADS

Mobility Element Roads			Levels of Service				
Road Classification		No. of Travel Lanes	A	B	C	D	E
Light Collector	w/Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
% Increase w/Continuous Left Turn Lane			58%	46%	34%	24%	17%

Source: County of San Diego "Table 1 Average Daily Vehicle Trips"

This relative magnitude of increase would be expected for "Enhanced Residential Collector" series proposed for The Option as well.

Based on the above, the capacity for the The Option would increase from 4,500 ADT (standard) to 6,030 ADT with the enhancement of the 3rd lane, as shown in **Table B**.

TABLE B
ESTIMATED INCREASE IN LOS WITH CONTINUOUS (TWO-WAY) LEFT TURN LANE
FOR COUNTY NON-MOBILITY ELEMENT RESIDENTIAL COLLECTOR

Non-Mobility Element Roads		Levels of Service				
Road Classification	No. of Travel Lanes	A	B	C	D	E
Residential Collector	2	—	—	<4,500	—	—
ADT Increase w/Continuous Left Turn Lane (+34%)		—	—	<6,030	—	—

Source: County of San Diego "Table 1 Average Daily Vehicle Trips" and LLG, 2017.

Attachment A shows the County's published public road standards. **Attachment B** shows the County's roadway capacity.

Intersection Operations

The northbound approach of The Option provides for a left-turn lane and a shared through/right-turn lane on Country Club Drive at Harmony Grove Road. LLG's capacity analyses conducted for The Option's design criteria, concluded **no new significant intersection impacts** would occur, compared to the Preferred Configuration.

Roadway Segment Operations

The maximum Average Daily Traffic (ADT) load forecasted for Country Club Drive is 5,105 ADT under Existing + Project + Cumulative traffic volumes (See *Figure 8-2* of the TIA – “Existing + Project + Cumulative Traffic Volumes”).

As discussed above, the Option section is similar in ROW to the County’s two-lane “Residential Collector” standard, which has a published capacity of 4,500 ADT at LOS C, but with the addition a third lane. This results in an increase in capacity of 34% to 6,030 ADT. Thus, The Option would result in better than LOS D operations, and ***no new significant street segment impacts*** would be calculated.

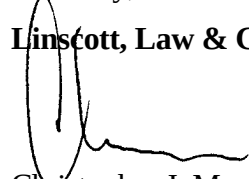
CONCLUSIONS

The Option will provide an enhancement to the Residential Collector standard for Country Club Drive by providing a third lane which is estimated to provide a 34% increase in capacity to 6,030 ADT (LOS C) based on similar comparisons of other published County Mobility Element roadways. The maximum traffic volume demand for this segment is 5,105 ADT. Therefore, the proposed Existing ROW Option roadway segment will provide sufficient segment capacity to address all forecasted volumes and no significant impacts are calculated.

Furthermore, no significant impacts are calculated at the Country Club Drive/Harmony Grove Road intersection with the two-lane northbound approach (left-turn lane and a shared through/right-turn lane).

Sincerely,

Linscott, Law & Greenspan, Engineers



Christopher J. Mendiara
Associate Principal

Attachments: *Attachment A: Table 2A/B County of San Diego Public Road Standards*
 Attachment B: Table 1 Average Daily Vehicle Trips

TABLE 2A: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS**MOBILITY ELEMENT ROAD CLASSIFICATIONS**

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDER (# / WIDTH)	PARKWAY WIDTH	MIN. CURVE RADIUS	MAX. DESIRABLE GRADE	MIN. DESIGN SPEED (MPH)
Expressway (6.1)	6 / 12'	34'	126'	146'	2 / 10'	10'	1,700'	6%	65
Prime Arterial (6.2)	6 / 12'	14'	102'	122'	2 / 8'	10'	1,700'	6%	65
Major Road									
With Raised Median (4.1A)	4 / 12'	14'	78'	98'	2 / 8'	10'	1,200'	7%	55
With Intermittent Turn Lanes (4.1B)	4 / 12'	-	64' - 78'	84' - 98'	2 / 8'	10'	1,200'	7%	55
Boulevard									
With Raised Median (4.2A)	4 / 12'	14'	78'	106'	2 / 8'	14'	500'	9%	40
With Intermittent Turn Lanes (4.2B)	4 / 12'	-	64' - 78'	92' - 106'	2 / 8'	14'	500'	9%	40
Community Collector									
With Raised Median (2.1A)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
With Continuous Left Turn Lane (2.1B)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
With Intermittent Turn Lanes (2.1C)	2 / 12'	-	40' - 54'	60' - 74'	2 / 8'	10'	700'	9%	45
With Improvement Options (2.1D)	2 / 12'	-	40' - 54'	84'	2 / 8'	15' - 22'	700'	9%	45
No Median (2.1E)	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Light Collector									
With Raised Median (2.2A)	2 / 12'	14'	54'	78'	2 / 8'	12'	500'	9%	40
With Continuous Left Turn Lane (2.2B)	2 / 12'	14'	54'	78'	2 / 8'	12'	500'	9%	40
With Intermittent Turn Lanes (2.2C)	2 / 12'	-	40' - 54'	64' - 78'	2 / 8'	12'	500'	9%	40
With Improvement Options (2.2D)	2 / 12'	-	40' - 54'	88'	2 / 8'	17' - 24'	500'	9%	40
No Median (2.2E)	2 / 12'	-	40'	64'	2 / 8'	12'	500'	9%	40
With Reduced Shoulder (2.2F)	2 / 12'	-	28'	52'	2 / 2'	12'	500'	9%	40
Minor Collector									
With Raised Median (2.3A)	2 / 12'	14'	54'	82'	2 / 8'	14'	350'	12%	35
With Intermittent Turn Lanes (2.3B)	2 / 12'	-	40' - 54'	68' - 82'	2 / 8'	14'	350'	12%	35
No Median (2.3C)	2 / 12'	-	40'	68'	2 / 8'	14'	350'	12%	35

NOTES:

- 1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above.
- 2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
- 3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
- 4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.
- 5 Additional pavement and ROW may be required for ME Boulevards / Community Collectors (4 feet) and Light Collectors (12 feet) in Industrial/Commercial Zones.
- 6 ME roads needing additional turn or passing lanes will require an additional 12 to 14 feet of pavement and ROW for each lane.
- 7 The maximum superelevation allowed on ME roads is 6%. Superelevation is not normally required on Non-ME roads.
- 8 ME roads designated with Bike Lanes will require an additional 10 feet of pavement and ROW. This may be increased to 12' for four-lane roads and above based upon the provisions in Section 7.3 of these standards.
- 9 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
- 10 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.
- 11 Road surfacing widths include median width.

TABLE 2B: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS

NON-MOBILITY ELEMENT ROAD CLASSIFICATIONS

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDER (# / WIDTH)	PARKWAY WIDTH	MINIMUM CURVE RADIUS	MAXIMUM DESIRABLE GRADE	MINIMUM DESIGN SPEED (MPH)
Residential Collector	2 / 12'	-	40'	60'	2 / 8'	10'	300'	12%	30
Rural Residential Collector *	2 / 12'	-	28'	48'	2 / 2'	10'	300'	12%	30
Residential Road	2 / 12'	-	36'	56'	2 / 6'	10'	200'	15%	30
Rural Residential Road *	2 / 12'	-	28'	48'	2 / 2'	10'	200'	15%	30
Residential Cul-de-sac	2 / 12'	-	32'	52'	2 / 4'	10'	200'	15%	30
Residential Loop	2 / 12'	-	32'	52'	2 / 4'	10'	200'	15%	30
Industrial/Commerical Collector	4 / 12'	-	68'	88'	2 / 10'	10'	300'	8%	30
Industrial/Commerical	2 / 16'	-	52'	72'	2 / 10'	10'	200'	8%	30
Industrial/Commercial Cul-de-sac	2 / 16'	-	52'	72'	2 / 10'	10'	200	8%	30
Frontage	2 / 12'	-	32' min	52' min	1 / 8'	10'	See above	See above	-
Alley	2 / 10'	-	20-30'	20-30'	None	None	50'	12%	n/a
Hillside Residential	See NOTE 4	-	-	-	-	-	-	-	-

- NOTES:**
- 1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above.
 - 2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
 - 3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
 - 4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.
 - 5 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
 - 6 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

LEGEND: * Serves lots > 2 acres in size w/
no demand for on-street parking

Attachment B

TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

MOBILITY ELEMENT ROADS		LEVELS OF SERVICE				
Road Classification	# of Travel Lanes	A	B	C	D	E
Expressway (6.1)	6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)	6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median (4.1A)	4	<14,800	<24,700	<29,600	<33,400
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000
NON-MOBILITY ELEMENT ROADS**		LEVELS OF SERVICE				
Residential Collector	2	-	-	<4,500	-	-
Rural Residential Collector***	2	-	-	<4,500	-	-
Residential Road	2	-	-	<1,500	-	-
Rural Residential Road***	2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road	2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.