RICK
ENGINEERING COMPANY
Traffic Division

March 25, 2015

Record ID: PDS2015-STP-14-034
Environmental Log No: PDS2014-ER-06-09-006A

Mr. Casey Malone
Lansing Companies
12671 High Bluff Drive, Suite 150
San Diego, California 92130

SUBJECT: TRAFFIC ASSESSMENT FOR VALLEY PARK APARTMENT COMPLEX IN RAMONA, CALIFORNIA (RICK ENGINEERING COMPANY JOB NUMBER 17373)

Dear Mr. Malone:

Based on the initial consultation meeting on February 25, 2014 and the County of San Diego's scoping letter dated January 16, 2015, regarding the above-referenced project, the following summarizes the traffic assessment that was prepared for the 62-unit Valley Park Apartment Complex project. Based on subsequent coordination with both County of San Diego Transportation and Caltrans staff, this traffic assessment will be limited to an Issue Specific Traffic Impact Study with the following analysis scenarios to be assessed:

- Existing Conditions
- Existing + Project Conditions

The traffic assessment has been prepared to determine any traffic-related impacts within the project area roadways and intersections due to the proposed 16th Street Apartment Complex development. The site is located south-east of Main Street/16th Street intersection in the City of Ramona, within the County of San Diego. **Exhibit 1** shows the project vicinity map.

PROJECT DESCRIPTION

The project is proposed to be situated on an existing 2.87 acres of undeveloped land southeast of the Main Street and 16th Street intersection (APN# 282-262-75) and consists of 62 multi-family apartment units with amenities. The project proposes to have one main primary access via 16th Street. **Exhibit 2** shows the proposed site plan.

EXISTING TRANSPORTATION CONDITIONS

The following is a brief description of the roadways within the project area.

Main Street (SR 67) is a two-lane north-south highway south of Pala Street and transitions to a 4-lane facility north of Pala Street. Per the County's Mobility Element, Main Street (SR 67) is classified as a 4-lane (4.1B) major road with intermittent turn lanes within the study area. Main Street (SR 67) is a north-south state route the traverses from Poway to SR-78 within the County of San Diego. The posted speed limit is 45 mph south of Pala Street and 35 mph north of Pala Street and parking is not permitted.

SDC PDS RCVD 08-28-15
STP14-034

15th Street/Montecito Road west of Main Street (SR-67) is classified as a 2-lane (2.2E) light collector with parking generally permitted on the one side of the street and the posted speed limit is 40 mph. A traffic signal is currently provided at its intersection with Main Street (SR-67).

16th Street is a non-mobility element 2-lane undivided roadway that runs east to west with curb, gutter, sidewalk and parking generally permitted on both sides of the street. The posted speed limit near the project site is 25 mph during school hours. 16th Street is anticipated to serve as the primary access to the project site via a single driveway.

Ramona Street is classified as a 2-lane (2.2C) light collector with intermittent turn lanes east of Main Street (SR-67) and is a non-mobility element road west of Main Street (Day Street). Bike lanes are currently provided along Ramona Street and the posted speed limit is 40 mph. The posted speed limit on Day Street is 25 mph and parking is permitted. A traffic signal is currently provided at its intersection with Main Street (SR 67).

Exhibit 3 shows the existing transportation conditions within the project area.

EXISTING TRAFFIC VOLUMES

Existing traffic volumes at the project area intersections and roadways were obtained from traffic data collected by Accurate Video Counts, Inc. on Thursday, January 8, 2015. The turning movement counts were conducted during the AM (7-9) and PM (4-6) periods. **Exhibit 4** shows the existing intersection turning movement counts within the study area. **Appendix A** contains the manual turning movement count and ADT summary sheets.

EXISTING INTERSECTION OPERATIONS

Existing AM and PM peak hour operational analysis were conducted at the following intersections:

1. 16th Street/Project Access
2. 16th Street/Main Street(SR-67)
3. Main Street (SR-67)/Day Street-Ramona Street (Signalized)
4. Main Street (SR-67)/15th Street (Signalized)

Based on methodologies described in Chapter 16 (signalized intersections) of the 2000 Highway Capacity Manual (HCM) the intersections of Main Street (SR-67)/Day Street-Ramona and Main Street (SR-67)/15th Street are currently calculated to operate at LOS C or better during the AM and PM peak hours. In addition, an Intersection Lane Vehicle (ILV) analysis per the Caltrans Highway Design Manual (HDM) shows these intersections to currently be under capacity (< 1,200 ILV) during the AM and PM peak periods.

Based on methodologies described in Chapter 17 (two-way stop controlled intersections) of the 2000 Highway Capacity Manual, the critical movements of all the unsignalized project intersections were calculated to currently operate at LOS C or better during the AM and PM peak periods.

Based on the County's Mobility Element ADT/LOS table, the project area roadways are calculated to currently operate at LOS C or better on a daily basis.

SITE TRAFFIC GENERATION

The site traffic generation was calculated utilizing the trip generation rates listed in the SANDAG's *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* for Multiple Family (more than 20 dwelling units/acre). **Table 1** shows the proposed 62 apartment units to generate about 372 Average Daily Trips (ADT) with 30 AM peak hour trips (6 inbound/24 outbound) and 33 PM peak hour trips (23 inbound/10 outbound).

SIGNIFICANCE IMPACT CRITERIA

The significance impact criteria and significance thresholds were based on the guidelines provided in the County of San Diego's *Guidelines for Determining Significance Transportation and Traffic* document (dated August 2011).

For intersections and roadway segments affected by the project, level of service (LOS) D or better is considered acceptable. If a proposed project's traffic causes the level of service to deteriorate from LOS D or better to LOS E or worse, the impacts are determined to be significant. For signalized intersections that are already operating at LOS E or LOS F, the impacts are determined to be significant if the project's traffic causes an incremental delay of greater than or equal to 2.0 seconds for LOS E and 1.0 second for LOS F. For unsignalized intersections already operating at LOS E or LOS F, the impacts are determined to be significant if the project's traffic adds greater than 20 peak hour trips(to critical movements) for LOS E and greater than 5 peak hour trips(to critical movements) for LOS F.

Appendix B contains the August 2011 County of San Diego Significance Determination Thresholds for Traffic.

EXISTING + PROJECT INTERSECTION OPERATIONS

The proposed project trips were distributed to the study area intersections based on the existing local traffic patterns, review of existing turning movement counts and proximity to nearby major streets and highways. Based on this, **Exhibit 5** shows the project traffic distribution percentages within the project area. **Exhibit 6** shows the project trip assignment within the study area. **Exhibit 7** shows the existing + project traffic volumes.

With the addition of project related trips, the intersections of Main Street (SR-67)/Day Street-Ramona and Main Street (SR-67)/15th Street are calculated to continue to operate at LOS C or better during the AM and PM peak hours. In addition, an Intersection Lane Vehicle (ILV) analysis per the Caltrans Highway Design Manual (HDM) shows these intersections to currently be under capacity (< 1,200 ILV) during the AM and PM peak periods.

All the critical movements of all the unsignalized project intersections were calculated to continue to operate at LOS C or better during the AM and PM peak periods with the addition of the project traffic.

With the addition of project traffic, the project area roadways are calculated to continue operate at LOS C or better on a daily basis.

Table 2 summarizes the study area roadway segment analysis for both existing and existing + project conditions. No significant impacts were calculated.

Table 3 summarizes the study area intersection analysis for both existing and existing + project conditions. No significant impacts were calculated based on the County's significance criteria.

Appendix C contains the HCM LOS Methodologies and intersection operations calculation sheets and ILV calculation sheets.

CONCLUSIONS/RECOMMENDATIONS

Based on the traffic analysis of the proposed 62-unit 16th Street Apartment Complex development project, the nearby project area intersections and roadway segments were calculated to operate at acceptable levels of services (LOS C or better) for the analysis scenarios and no significant impacts were calculated at any of the intersections and roadway segments based on the County' significance criteria.

To help facilitate access in the project area, it is recommended that a stop sign be installed at the southbound approach of the project driveway at the 16th Street and project driveway intersection. The project driveway is located along an existing utility easement that also provided access to two vacant lots north of the project site.

In addition, the project should pay in to the County's Transportation Impact Fee (TIF) program to fund improvements to roadways necessary to mitigate potential cumulative impacts caused by traffic from this development and future development. The TIF fee shall be calculated based on current County TIF rates for Multi-Family Residential use in the Ramona Community Planning area.

Should you have any questions, please contact me at (619) 291-0707.

Sincerely,

RICK ENGINEERING COMPANY

Mark M. Jugar, PE, TE, PTOE

K:\Files\17373\text\17373.002.doc

Enclosures

REGISTERED PROFESSIONAL ENGINEER
MARK MEDINA JUGAR
No. 2175
Exp. 6-30-15
TRAFFIC
STATE OF CALIFORNIA

TABLE 1
VALLEY PARK APARTMENTS TIA
TRIP GENERATION

LAND USE	SIZE	RATE (ADT/Unit)	ADT	AM PEAK			PM PEAK		
				PEAK HOUR %	VOLUME		PEAK HOUR %	VOLUME	
					IN	OUT		IN	OUT
Multi-family (More than 20 DU/Acre)	62 Units	6	372	8%	6	24	9%	23	10

Note: Rates were based on SANDAG's Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region

TABLE 2
VALLEY PARK APARTMENTS TIA
ROADWAY SEGMENT ANALYSIS

	Roadway Segment	Functional Classification/Lanes	LOS E Capacity	Existing			Existing + Project				
				ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	Volume Increase	Significant Project Impact Yes/No
1	Main Street(SR-67) between Pala Street and Day Street/Ramona Street	4.1B Major Road[1]	34,200	23,927	0.700	C	24,087	0.704	C	160	No
2	Main Street(SR-67) between Day Street/Ramona Street and 16th Street	4.1B Major Road[1]	34,200	25,528	0.746	C	25,725	0.752	C	197	No
3	Main Street(SR-67) between 16th Street and 15th Street	4.1B Major Road[1]	34,200	25,285	0.739	C	25,441	0.744	C	156	No
4	16th Street between La Brea Street and Main Street (SR-67)	Residential Road	**	1,757	**	**	1,768	**	**	11	No
5	16th Street between Main Street (SR-67) and Project Access Dwy	Residential Road	**	3,599	**	**	3,963	**	**	364	No
6	16th Street south of Project Access Dwy	Residential Road	**	2,649	**	**	2,657	**	**	8	No

LOS = Level of Service
Segments with Significant Impacts Shown in **Bold**
Significant Impact Thresholds per County of San Diego Guidelines for Determining Significance, August 2011
Significant Impact:
Two-lane Road ≥ 200 ADT for LOS E
Two-lane Road ≥ 100 ADT for LOS F
Four-lane Road ≥ 400 ADT for LOS E
Four-lane Road ≥ 200 ADT for LOS F
Two-lane Highway >325 ADT for LOS E
Two-lane Highway >225 ADT for LOS F

[1] with Two-way left-turn lane/intermittent turn lanes
** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic.

TABLE 3
VALLEY PARK APARTMENTS TIA
INTERSECTION OPERATIONS SUMMARY

INT. #	INTERSECTION		EXISTING		EXISTING + PROJECT			
			DELAY	LOS	DELAY	LOS	INCREMENTAL DELAY/VOLUME INCREASE	PROJECT IMPACT
1	**16th Street and Project Access (U)**							
	AM peak							
		WBL	0.2	A	0.2	A	0.0	No
		EB L	DNE	DNE	0.6	A	0.6	No
		NB LTR	9.4	A	10.0	A	0.6	No
		SB LTR	DNE	DNE	8.9	A	8.9	No
	PM peak							
		WBL	0.1	A	0.1	A	0.0	No
		EB L	DNE	DNE	1.0	A	1.0	No
		NB LTR	9.7	A	10.4	B	0.7	No
		SB LTR	DNE	DNE	8.8	A	8.8	No
2	**16th Street and Main Street (SR-67) (U)**							
	AM peak							
		NBL	9.5	A	9.5	A	0.0	No
		SB L	9.3	A	9.4	A	0.1	No
		EB LTR	11.7	B	11.8	B	0.1	No
		WB LTR	13.3	B	14.8	B	1.5	No
	PM peak							
		NBL	9.4	A	9.4	A	0.0	No
		SB L	10.9	B	11.1	B	0.2	No
		EB LTR	15.0	C	16.1	C	1.1	No
		WB LTR	12.8	B	14.0	B	1.2	No
3	**Main Street (SR-67) and Ramona Street-Day Street (S)**							
	AM peak	-	26.8	C	26.8	C	0.0	No
	PM peak	-	24.4	C	25.6	C	1.2	No
4	**Main Street (SR-67) and 15th Street-Montecito Road (S)**							
	AM peak	-	14.9	B	14.9	B	0.0	No
	PM peak	-	25.0	C	25.1	C	0.1	No

Bold indicates poor level of service
DNE = Does not exist
Delays and Level of Service calculated utilizing the methodologies described in Chapters 16 and 17 of the 2000 Highway Capacity Manual (HCM)
DELAY is measured in seconds
Significant Impact Thresholds per *County of San Diego Guidelines for Determining Significance, August 2011*

Significant Impact **(Signalized)** :
1) LOS D or better to LOS E or worse
2) Incremental Delay > 2 seconds for LOS E
3) Incremental Delay > 1 seconds for LOS F

Significant Impact **(Unsignalized)** :
1) LOS D or better to LOS E or worse
2) Critical Movement Peak Hour trips > 20 for LOS E
3) Critical Movement Peak Hour trips > 5 for LOS F

LOS = Level of Service
NB = Northbound, SB = Southbound, etc.
T=thru movement, L=left-turn movement, etc.
(S) = Signalized intersection, (U) = Unsignalized intersection
(U) = Unsignalized intersection

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EXHIBIT 1

PROJECT VICINITY MAP

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

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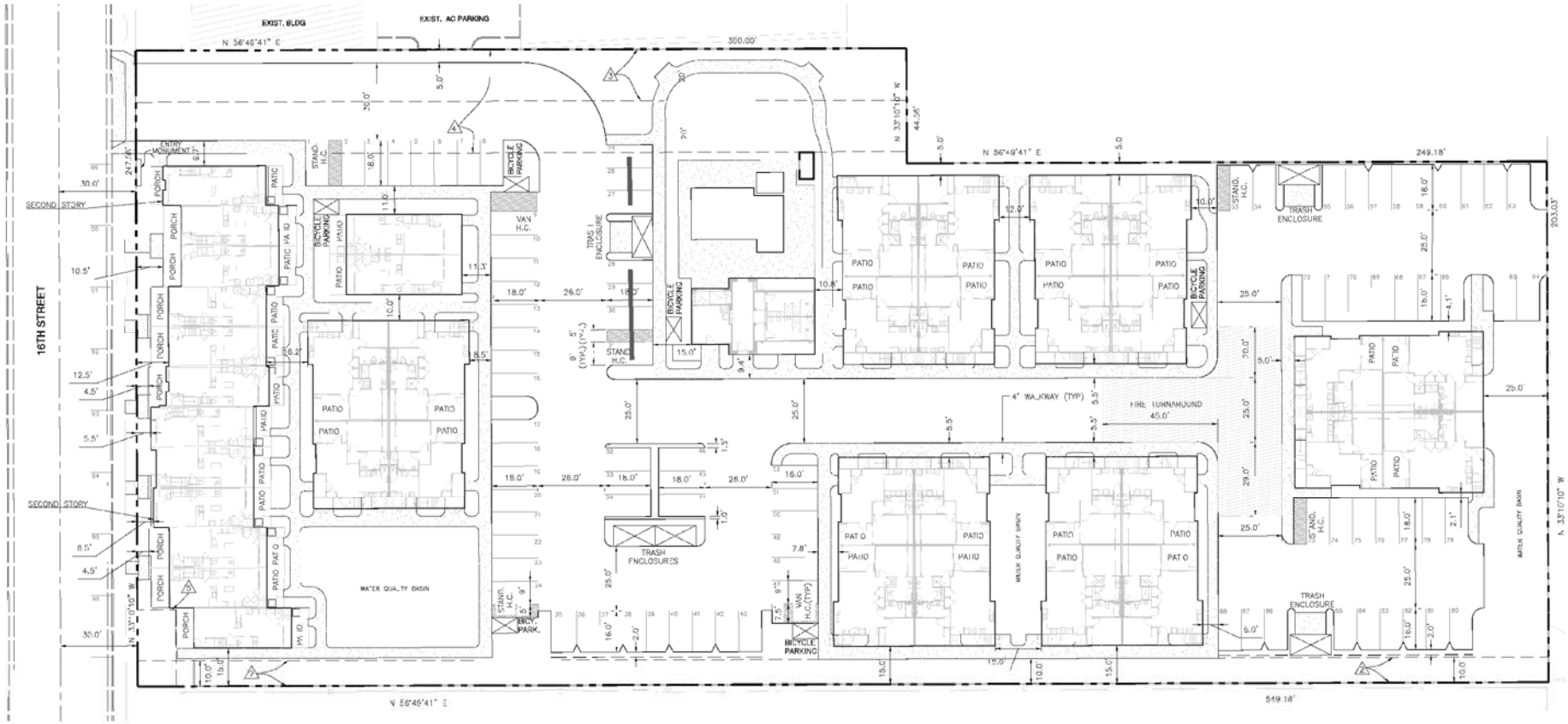


SOURCE: UNITED ENGINEERING GROUP
PLOT PLAN MARCH 20, 2015

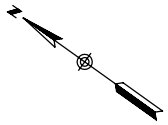
Site Address:
APN: 282-262-75

Summary Table:

Proposed:

62 unit apartment complex

2.87 Acres Gross
62 Units = 22.0 units per acre



NO SCALE

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EXHIBIT 2

SITE PLAN

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

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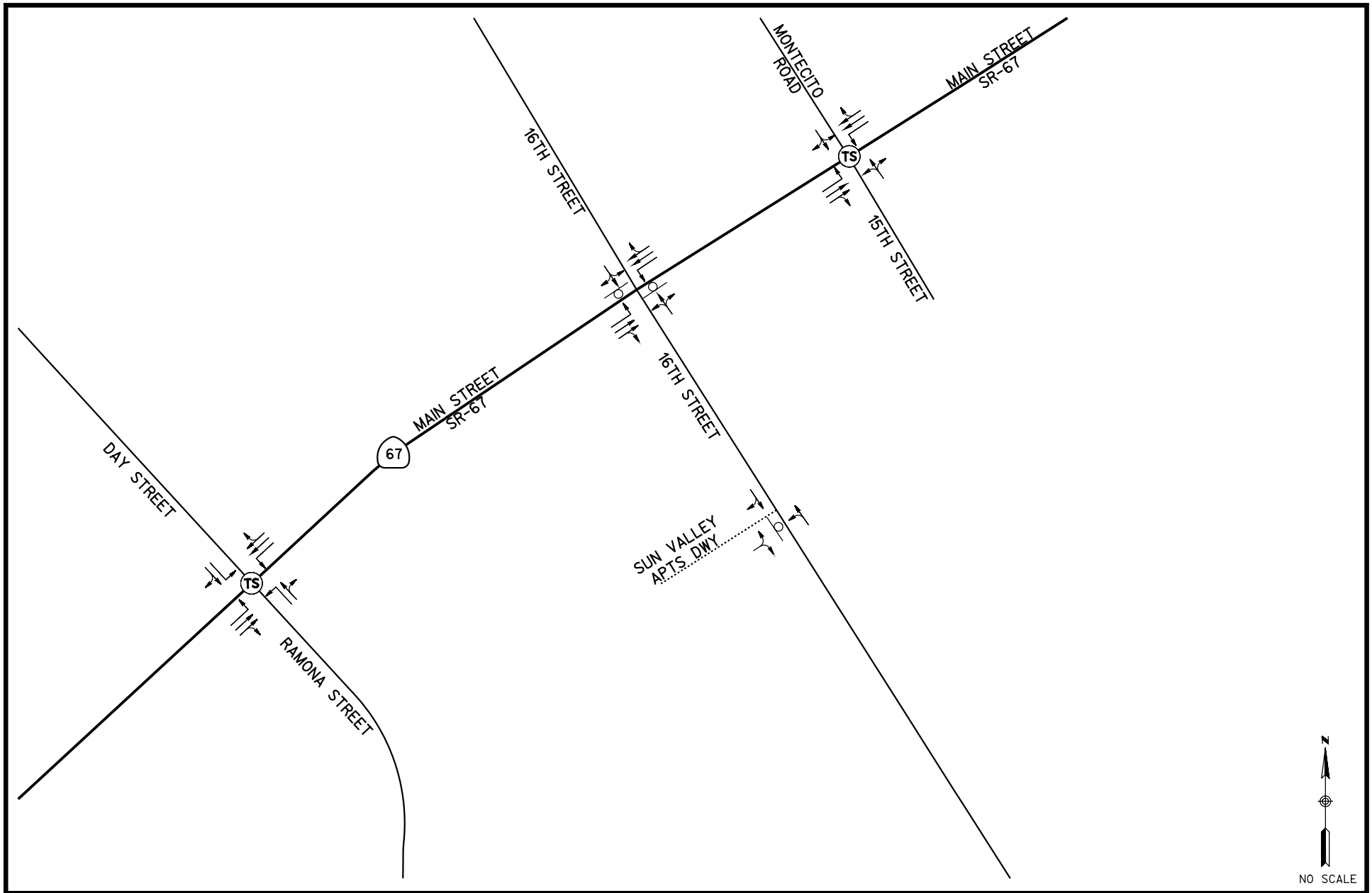

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EXHIBIT 3

EXISTING TRANSPORTATION CONDITIONS

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

LEGEND

= STOP CONTROL

TS = TRAFFIC SIGNAL

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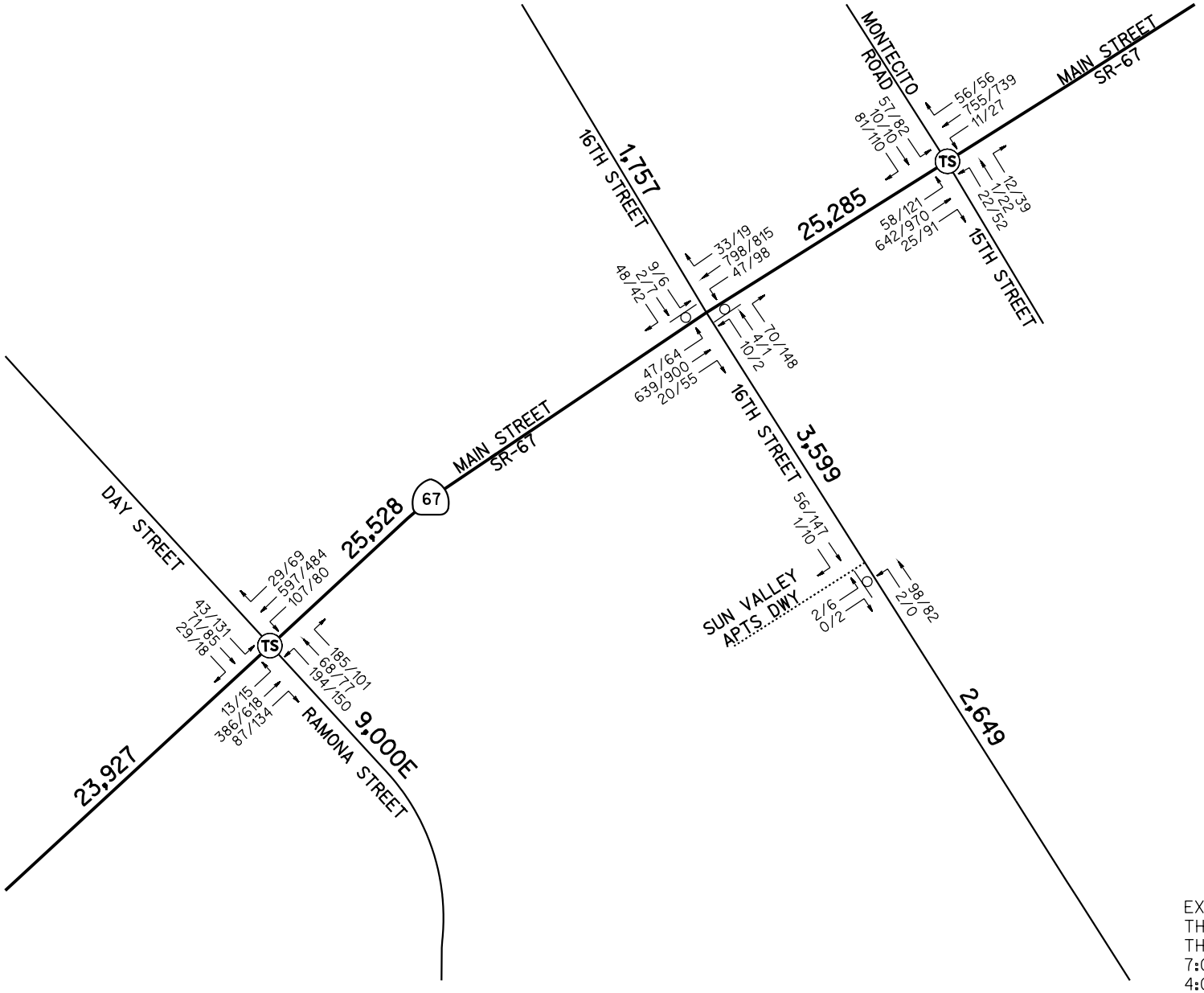

EXISTING COUNTS CONDUCTED:
THURSDAY 08/29/13 AND
THURSDAY 01/08/15
7:00 AM - 9:00 AM
4:00 PM - 6:00 PM

N

NO SCALE

RICK ENGINEERING COMPANY

EXHIBIT 4

EXISTING TRAFFIC VOLUMES

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

LEGEND

xxxx/xxxx = AM/PM PEAK HR
XXX = ADT E = ESTIMATED ADT
= STOP CONTROL
TS = TRAFFIC SIGNAL

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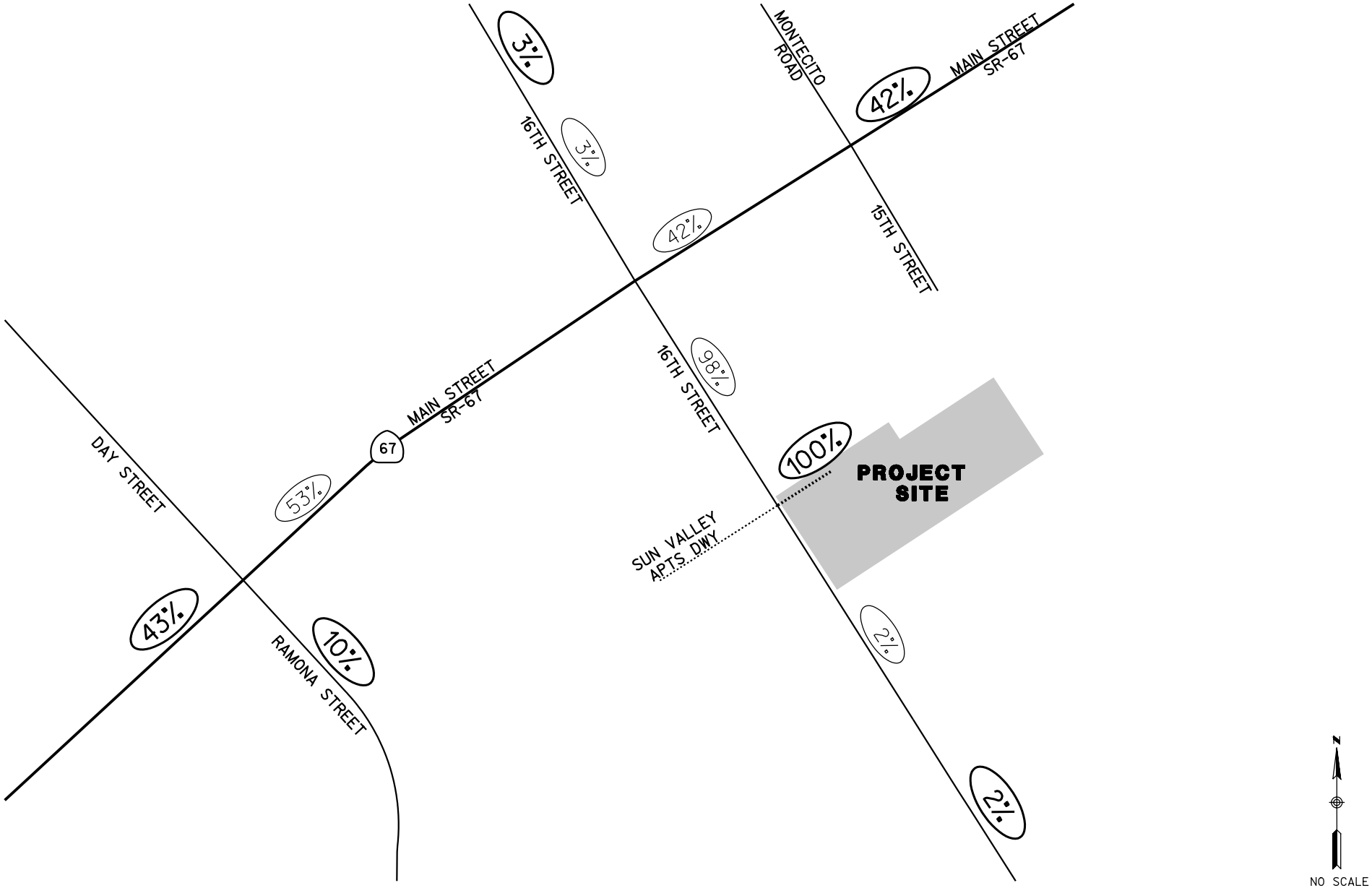

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EXHIBIT 5

PROJECT TRIP DISTRIBUTION

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

LEGEND

XX% = MACRO TRIP DISTRIBUTION PERCENTAGES

XX% = MICRO TRIP DISTRIBUTION PERCENTAGES

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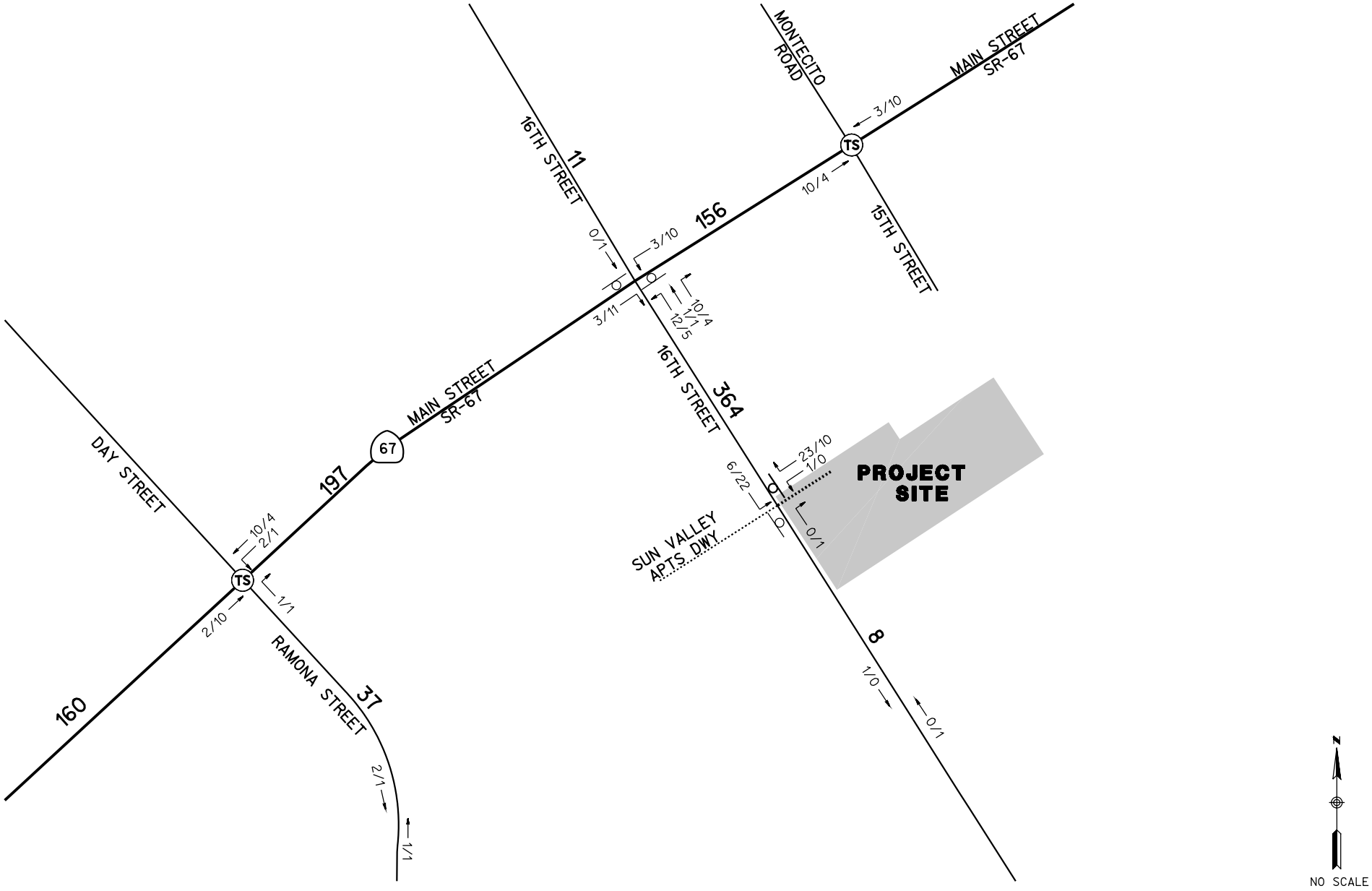

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EXHIBIT 6

PROJECT TRAFFIC VOLUMES

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

LEGEND

XXXX/XXXX = AM/PM PEAK HR

XXX = ADT E = ESTIMATED ADT

= STOP CONTROL

TS = TRAFFIC SIGNAL

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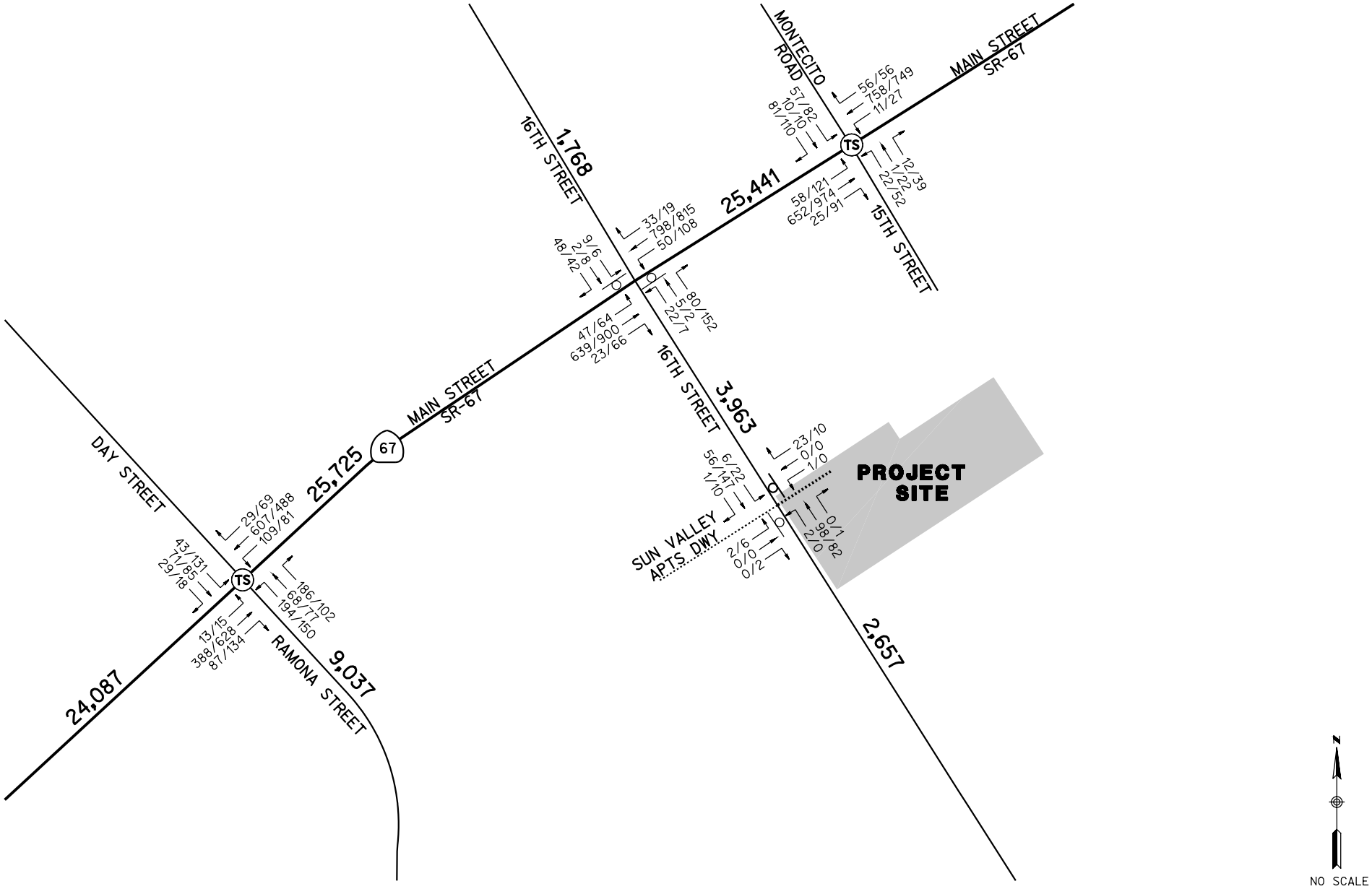

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EXHIBIT 7

EXISTING + PROJECT TRAFFIC VOLUMES

VALLEY PARK APARTMENTS TRAFFIC ANALYSIS

LEGEND

xxxx/xxxx = AM/PM PEAK HR

XXX = ADT E = ESTIMATED ADT

= STOP CONTROL

TS = TRAFFIC SIGNAL

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APPENDIX A

Manual Turning Count Sheets and ADT Summary Sheets

Turn Count Summary

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

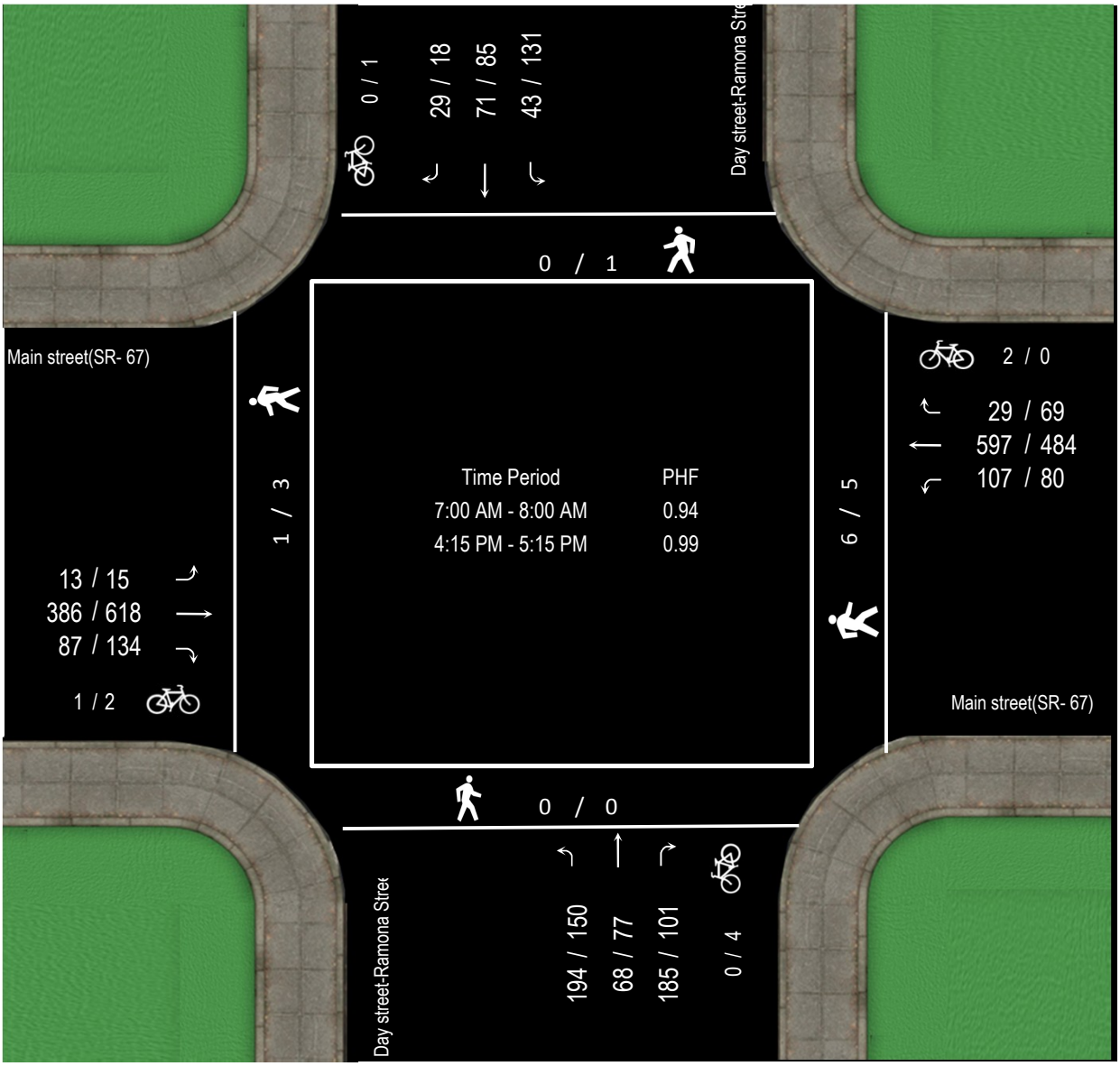
Location: Main street(SR- 67) @ Day street-Ramona Street

Date of Count: *Thursday, August 29, 2013*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *13-0090*



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Vehicular Count

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

Location: Main street(SR- 67) @ Day street-Ramona Street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
7:00 AM	5	32	10	26	186	2	52	14	31	0	81	42	481
7:15 AM	10	14	8	24	154	9	59	19	53	5	106	17	478
7:30 AM	11	15	6	34	140	6	49	17	55	5	80	9	427
7:45 AM	17	10	5	23	117	12	34	18	46	3	119	19	423
8:00 AM	13	6	5	26	151	10	69	9	36	5	92	7	429
8:15 AM	17	12	8	22	149	11	49	21	39	5	87	11	431
8:30 AM	15	6	2	11	135	12	36	12	28	4	106	12	379
8:45 AM	21	6	2	9	120	8	39	10	24	6	127	7	379
Total	109	101	46	175	1,152	70	387	120	312	33	798	124	3,427

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Volume	43	71	29	107	597	29	194	68	185	13	386	87	1,809
PHF	0.63	0.55	0.73	0.79	0.80	0.60	0.82	0.89	0.84	0.65	0.81	0.52	0.94
Movement PHF		0.76			0.86			0.85			0.86		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
4:00 PM	24	16	4	16	119	22	21	19	22	0	194	27	484
4:15 PM	29	19	3	20	131	16	34	19	16	2	166	34	489
4:30 PM	36	25	5	22	119	18	41	15	24	4	156	28	493
4:45 PM	32	21	7	23	114	22	36	21	28	3	152	31	490
5:00 PM	34	20	3	15	120	13	39	22	33	6	144	41	490
5:15 PM	26	25	6	21	98	8	37	23	36	1	171	25	477
5:30 PM	21	24	4	19	98	17	26	21	35	3	165	32	465
5:45 PM	37	25	5	17	76	20	36	21	23	4	166	27	457
Total	239	175	37	153	875	136	270	161	217	23	1,314	245	3,845

PM Intersection Peak Hour : **4:15 PM - 5:15 PM** Intersection PHF : **0.99**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Volume	131	85	18	80	484	69	150	77	101	15	618	134	1962
PHF	0.91	0.85	0.643	0.87	0.924	0.784	0.915	0.875	0.765	0.625	0.931	0.817	0.99
Movement PHF		0.89			0.95			0.87			0.95		0.99

Turn Count Summary

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

RICK ENGINEERING COMPANY
Traffic Division

AVC

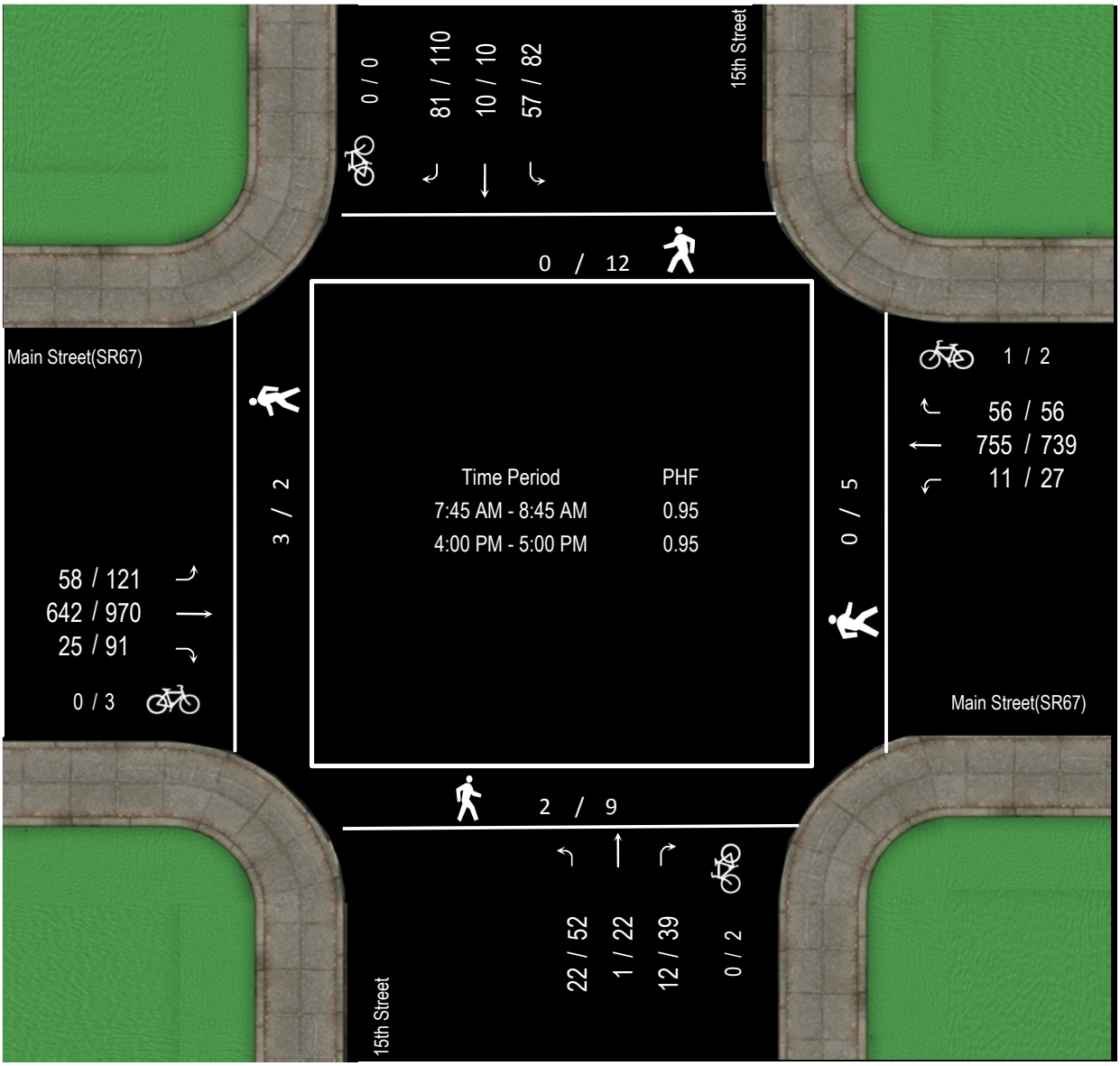
Location: Main Street(SR67) @ 15th Street

Date of Count: *Thursday, January 08, 2015*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *15-0287*



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Vehicular Count

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

Location: Main Street(SR67) @ 15th Street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	9	0	11	8	175	2	3	0	4	5	118	6	341
7:15 AM	23	0	12	7	183	0	3	0	1	2	137	8	376
7:30 AM	11	1	20	11	192	0	1	3	2	5	161	8	415
7:45 AM	17	4	22	17	187	3	6	0	4	6	165	9	440
8:00 AM	20	2	11	17	214	1	1	0	4	5	171	9	455
8:15 AM	20	1	10	9	184	5	2	0	8	4	139	16	398
8:30 AM	24	3	14	13	170	2	3	1	6	10	167	24	437
8:45 AM	19	0	8	9	180	3	3	3	5	10	155	8	403
Total	143	11	108	91	1,485	16	22	7	34	47	1,213	88	3,265

AM Intersection Peak Hour : **7:45 AM - 8:45 AM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	81	10	57	56	755	11	12	1	22	25	642	58	1,730
PHF	0.84	0.63	0.65	0.82	0.88	0.55	0.50	0.25	0.69	0.63	0.94	0.60	0.95
Movement PHF		0.86			0.89			0.88			0.90		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	TOTAL
4:00 PM	24	3	29	15	197	7	7	4	13	26	245	20	590
4:15 PM	29	3	17	8	197	9	14	5	11	25	253	37	608
4:30 PM	30	3	10	17	165	4	8	8	12	18	215	31	521
4:45 PM	27	1	26	16	180	7	10	5	16	22	257	33	600
5:00 PM	28	4	20	20	199	6	9	5	8	8	248	29	584
5:15 PM	19	1	21	15	176	5	8	3	12	11	270	24	565
5:30 PM	28	3	26	17	141	2	8	2	5	5	248	28	513
5:45 PM	19	0	24	9	181	1	2	0	8	7	263	28	542
Total	204	18	173	117	1,436	41	66	32	85	122	1,999	230	4,523

PM Intersection Peak Hour : **4:00 PM - 5:00 PM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	110	10	82	56	739	27	39	22	52	91	970	121	2319
PHF	0.92	0.833	0.707	0.824	0.938	0.75	0.696	0.688	0.813	0.875	0.944	0.818	0.95
Movement PHF		0.90			0.94			0.91			0.94		0.95

Turn Count Summary

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

RICK ENGINEERING COMPANY
Traffic Division

AVC

Location: Main Street(SR67) @ 16th street

Date of Count: *Thursday, January 08, 2015*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *15-0287*

RICK ENGINEERING COMPANY

Vehicular Count

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

Location: Main Street(SR67) @ 16th street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	21	3	1	4	163	8	8	3	6	4	107	13	341
7:15 AM	6	1	1	1	218	5	6	0	5	5	141	16	405
7:30 AM	13	1	2	3	171	10	14	1	0	6	136	14	371
7:45 AM	14	1	5	17	182	15	21	0	1	8	144	15	423
8:00 AM	12	0	0	8	226	12	18	0	2	0	175	9	462
8:15 AM	11	1	1	2	195	11	11	3	3	6	154	15	413
8:30 AM	11	0	3	6	195	9	20	1	4	6	166	8	429
8:45 AM	9	0	5	2	176	12	13	0	2	8	152	6	385
Total	97	7	18	43	1,526	82	111	8	23	43	1,175	96	3,229

AM Intersection Peak Hour : **7:45 AM - 8:45 AM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	48	2	9	33	798	47	70	4	10	20	639	47	1,727
PHF	0.86	0.50	0.45	0.49	0.88	0.78	0.83	0.33	0.63	0.63	0.91	0.78	0.93
Movement PHF		0.74			0.89			0.84			0.96		0.93

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	8	0	1	6	219	29	39	0	1	14	292	13	622
4:15 PM	8	3	2	4	214	24	43	0	0	15	226	15	554
4:30 PM	12	2	0	4	182	16	32	1	1	13	216	18	497
4:45 PM	14	2	3	5	200	29	34	0	0	13	256	18	574
5:00 PM	9	1	2	7	213	25	32	0	3	17	264	15	588
5:15 PM	12	1	2	7	148	23	24	1	2	16	242	9	487
5:30 PM	3	1	2	5	141	30	34	0	3	22	257	21	519
5:45 PM	7	2	1	4	141	23	28	0	0	14	233	14	467
Total	73	12	13	42	1,458	199	266	2	10	124	1,986	123	4,308

PM Intersection Peak Hour : **4:00 PM - 5:00 PM** Intersection PHF : **0.90**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	42	7	6	19	815	98	148	1	2	55	990	64	2247
PHF	0.75	0.583	0.5	0.792	0.93	0.845	0.86	0.25	0.5	0.917	0.848	0.889	0.90
Movement PHF		0.72			0.92			0.88			0.87		0.90

Turn Count Summary

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

RICK ENGINEERING COMPANY
Traffic Division

AVC

Location: Project Acess(Sun Valley Apartme @ 16th street

Date of Count: *Thursday, January 08, 2015*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *15-0287*

RICK ENGINEERING COMPANY

Vehicular Count

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

Location: Sun Valley Apartments Drive Way) @ 16th street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	9	0	0	0	0	0	18	0	0	0	1	28
7:15 AM	0	6	0	0	0	0	0	18	0	0	0	1	25
7:30 AM	0	11	0	0	0	0	0	18	0	0	0	0	29
7:45 AM	1	19	0	0	0	0	0	24	0	0	0	0	44
8:00 AM	0	6	0	0	0	0	0	30	1	0	0	1	38
8:15 AM	0	19	0	0	0	0	0	19	0	0	0	0	38
8:30 AM	0	12	0	0	0	0	0	25	1	0	0	1	39
8:45 AM	0	13	0	0	0	0	0	13	0	0	0	0	26
Total	1	95	0	0	0	0	0	165	2	0	0	4	267

AM Intersection Peak Hour : **7:45 AM - 8:45 AM** Intersection PHF : **0.90**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	1	56	0	0	0	0	0	98	2	0	0	2	159
PHF	0.25	0.74	#####	#####	#####	#####	#####	0.82	0.50	#####	#####	0.50	0.90
Movement PHF		0.71			#DIV/0!			0.81			0.50		0.90

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	34	0	0	0	0	0	20	1	0	0	1	56
4:15 PM	2	33	0	0	0	0	0	28	0	2	0	0	65
4:30 PM	3	36	0	0	0	0	0	17	1	1	0	1	59
4:45 PM	1	34	0	0	0	0	0	19	0	1	0	1	56
5:00 PM	2	30	0	0	0	0	0	20	0	0	0	2	54
5:15 PM	2	35	0	0	0	0	0	14	0	0	0	2	53
5:30 PM	3	43	0	0	0	0	0	20	0	2	0	1	69
5:45 PM	3	39	0	0	0	0	0	28	0	0	0	1	71
Total	16	284	0	0	0	0	0	166	2	6	0	9	483

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.87**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	10	147	0	0	0	0	0	82	0	2	0	6	247
PHF	0.83	0.855	#####	#####	#####	#####	#####	0.732	#####	0.25	#####	0.75	0.87
Movement PHF		0.85			#DIV/0!			0.73			0.67		0.87

24 Hour Segment Count

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

Location: Main St, btwn Day St and 16th St

Orientation: *East-West*

Date of Count: *Thursday, August 29, 2013*

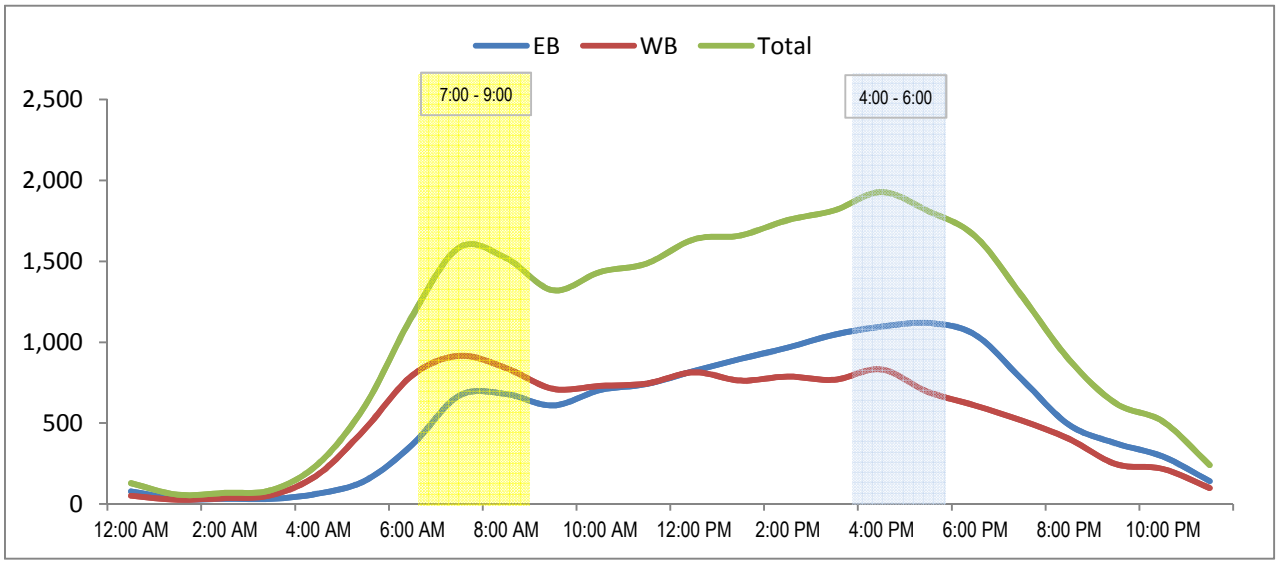
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *13-0090*

24 Hour Segment Volume				25,528				
Time	Hourly Volume			Time	Hourly Volume			
	EB	WB	Total		EB	WB	Total	
12:00 AM - 1:00 AM	78	51	129	12:00 PM - 1:00 PM	822	814	1,636	
1:00 AM - 2:00 AM	31	27	58	1:00 PM - 2:00 PM	897	763	1,660	
2:00 AM - 3:00 AM	32	37	69	2:00 PM - 3:00 PM	967	788	1,755	
3:00 AM - 4:00 AM	32	55	87	3:00 PM - 4:00 PM	1,047	768	1,815	
4:00 AM - 5:00 AM	65	185	250	4:00 PM - 5:00 PM	1,096	832	1,928	
5:00 AM - 6:00 AM	145	467	612	5:00 PM - 6:00 PM	1,119	692	1,811	
6:00 AM - 7:00 AM	367	796	1,163	6:00 PM - 7:00 PM	1,046	609	1,655	
7:00 AM - 8:00 AM	670	916	1,586	7:00 PM - 8:00 PM	770	515	1,285	
8:00 AM - 9:00 AM	680	840	1,520	8:00 PM - 9:00 PM	490	403	893	
9:00 AM - 10:00 AM	609	712	1,321	9:00 PM - 10:00 PM	375	247	622	
10:00 AM - 11:00 AM	704	730	1,434	10:00 PM - 11:00 PM	294	217	511	
11:00 AM - 12:00 PM	742	745	1487	11:00 PM - 12:00 AM	142	99	241	
Total	**4,155**	**5,561**	**9,716**	**Total**	**9,065**	**6,747**	**15,812**	

24-Hour	EB	Volume	13,220	24-Hour	WB	Volume	12,308



24 Hour Segment Count

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

Location: Main St, btwn Pala St and Day St

Orientation: *East-West*

Date of Count: *Thursday, August 29, 2013*

Analysts: *DASH*

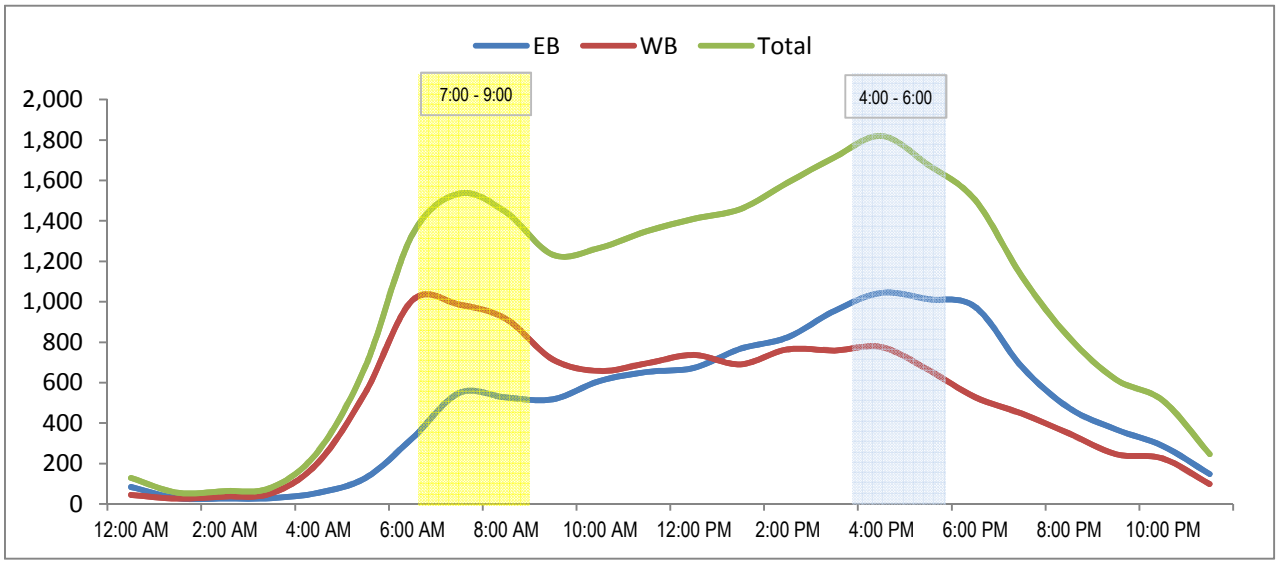
Weather: *Sunny*

AVC Proj. No: *13-0090*

24 Hour Segment Volume 23,927

Time	Hourly Volume EB	Hourly Volume WB	Hourly Volume Total	Time	Hourly Volume EB	Hourly Volume WB	Hourly Volume Total
12:00 AM - 1:00 AM	84	45	129	12:00 PM - 1:00 PM	673	737	1,410
1:00 AM - 2:00 AM	29	27	56	1:00 PM - 2:00 PM	768	691	1,459
2:00 AM - 3:00 AM	27	37	64	2:00 PM - 3:00 PM	824	765	1,589
3:00 AM - 4:00 AM	29	53	82	3:00 PM - 4:00 PM	955	759	1,714
4:00 AM - 5:00 AM	56	207	263	4:00 PM - 5:00 PM	1,044	776	1,820
5:00 AM - 6:00 AM	129	552	681	5:00 PM - 6:00 PM	1,013	664	1,677
6:00 AM - 7:00 AM	325	1,007	1,332	6:00 PM - 7:00 PM	975	528	1,503
7:00 AM - 8:00 AM	549	986	1,535	7:00 PM - 8:00 PM	677	447	1,124
8:00 AM - 9:00 AM	527	915	1,442	8:00 PM - 9:00 PM	475	349	824
9:00 AM - 10:00 AM	518	714	1,232	9:00 PM - 10:00 PM	369	247	616
10:00 AM - 11:00 AM	609	658	1,267	10:00 PM - 11:00 PM	287	225	512
11:00 AM - 12:00 PM	653	696	1349	11:00 PM - 12:00 AM	148	99	247
Total	**3,535**	**5,897**	**9,432**	**Total**	**8,208**	**6,287**	**14,495**

24-Hour EB Volume 11,743 **24-Hour WB Volume 12,184**



RICK ENGINEERING COMPANY
Traffic Division

24 Hour Segment Count

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

AVC

Location: 1. Main Street(SR67) btw, 16th Street and 15th Street

Orientation: *East-West*

Date of Count: *Thursday, January 08, 2015*

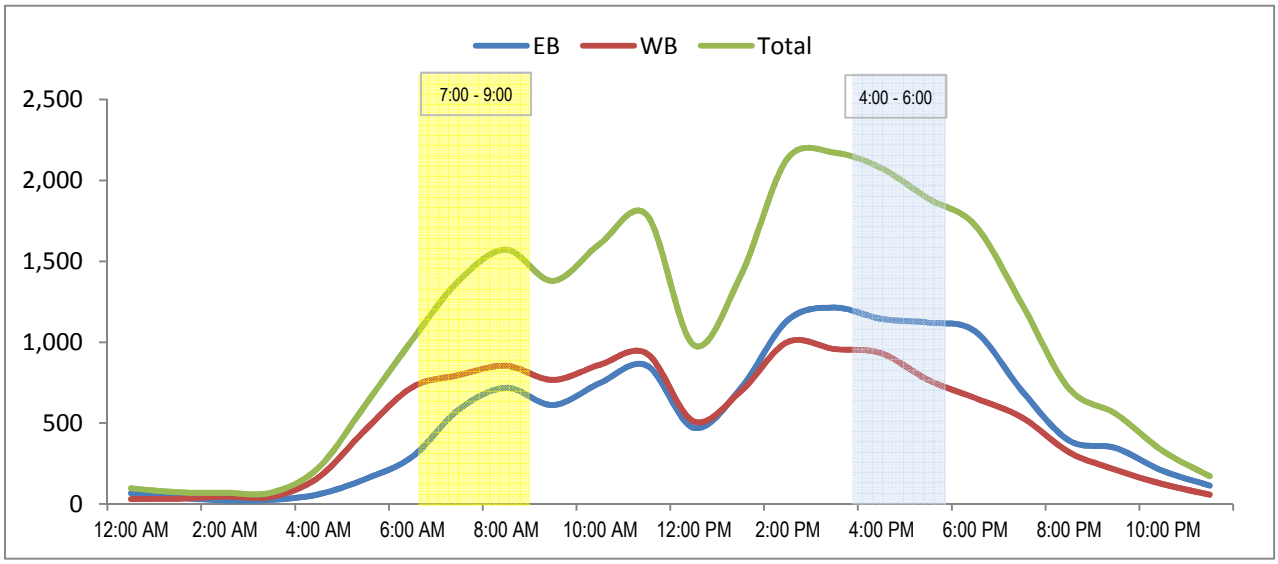
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *15-0287*

24 Hour Segment Volume				25,285			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	66	31	97	12:00 PM - 1:00 PM	471	511	982
1:00 AM - 2:00 AM	40	33	73	1:00 PM - 2:00 PM	714	696	1,410
2:00 AM - 3:00 AM	23	47	70	2:00 PM - 3:00 PM	1,135	1,001	2,136
3:00 AM - 4:00 AM	26	45	71	3:00 PM - 4:00 PM	1,214	958	2,172
4:00 AM - 5:00 AM	60	165	225	4:00 PM - 5:00 PM	1,144	932	2,076
5:00 AM - 6:00 AM	155	459	614	5:00 PM - 6:00 PM	1,121	767	1,888
6:00 AM - 7:00 AM	293	722	1,015	6:00 PM - 7:00 PM	1,067	655	1,722
7:00 AM - 8:00 AM	586	797	1,383	7:00 PM - 8:00 PM	699	535	1,234
8:00 AM - 9:00 AM	718	854	1,572	8:00 PM - 9:00 PM	393	321	714
9:00 AM - 10:00 AM	612	767	1,379	9:00 PM - 10:00 PM	346	211	557
10:00 AM - 11:00 AM	748	861	1,609	10:00 PM - 11:00 PM	205	123	328
11:00 AM - 12:00 PM	856	930	1786	11:00 PM - 12:00 AM	114	58	172
Total	**4,183**	**5,711**	**9,894**	**Total**	**8,623**	**6,768**	**15,391**

24-Hour	EB	Volume	12,806	24-Hour	WB	Volume	12,479



RICK ENGINEERING COMPANY
Traffic Division

24 Hour Segment Count

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

AVC

Location: 2. 16th Street btw, La Brea Street and Main Street

Orientation: *North-South*

Date of Count: *Thursday, January 08, 2015*

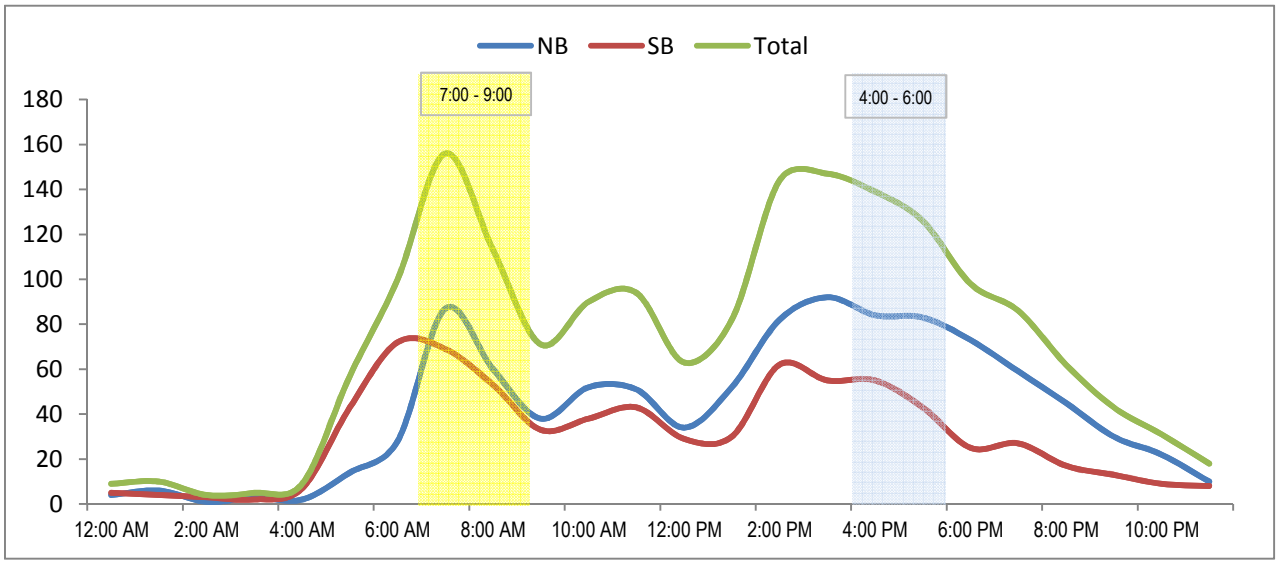
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *15-0287*

24 Hour Segment Volume				*1,757*				
Time	**Hourly Volume**			**Time**	**Hourly Volume**			
	NB	**SB**	**Total**		**NB**	**SB**	**Total**
12:00 AM - 1:00 AM	4	5	9	12:00 PM - 1:00 PM	34	29	63
1:00 AM - 2:00 AM	6	4	10	1:00 PM - 2:00 PM	52	30	82
2:00 AM - 3:00 AM	1	3	4	2:00 PM - 3:00 PM	82	62	144
3:00 AM - 4:00 AM	3	2	5	3:00 PM - 4:00 PM	92	55	147
4:00 AM - 5:00 AM	2	7	9	4:00 PM - 5:00 PM	84	55	139
5:00 AM - 6:00 AM	14	43	57	5:00 PM - 6:00 PM	83	43	126
6:00 AM - 7:00 AM	28	72	100	6:00 PM - 7:00 PM	73	25	98
7:00 AM - 8:00 AM	87	69	156	7:00 PM - 8:00 PM	59	27	86
8:00 AM - 9:00 AM	60	53	113	8:00 PM - 9:00 PM	45	17	62
9:00 AM - 10:00 AM	38	33	71	9:00 PM - 10:00 PM	30	13	43
10:00 AM - 11:00 AM	52	38	90	10:00 PM - 11:00 PM	22	9	31
11:00 AM - 12:00 PM	51	43	94	11:00 PM - 12:00 AM	10	8	18
Total	**346**	**372**	**718**	**Total**	**666**	**373**	**1,039**

24-Hour	*NB*	*Volume*	*1,012*	*24-Hour*	*SB*	*Volume*	*745*



RICK ENGINEERING COMPANY
Traffic Division

24 Hour Segment Count

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

AVC

Location: 3. 16th Street btw, Main Street(SR 67) and Project Acess(Sun Valley Apartments Drive Way)

Orientation: *North-South*

Date of Count: *Thursday, January 08, 2015*

Analysts: *DASH*

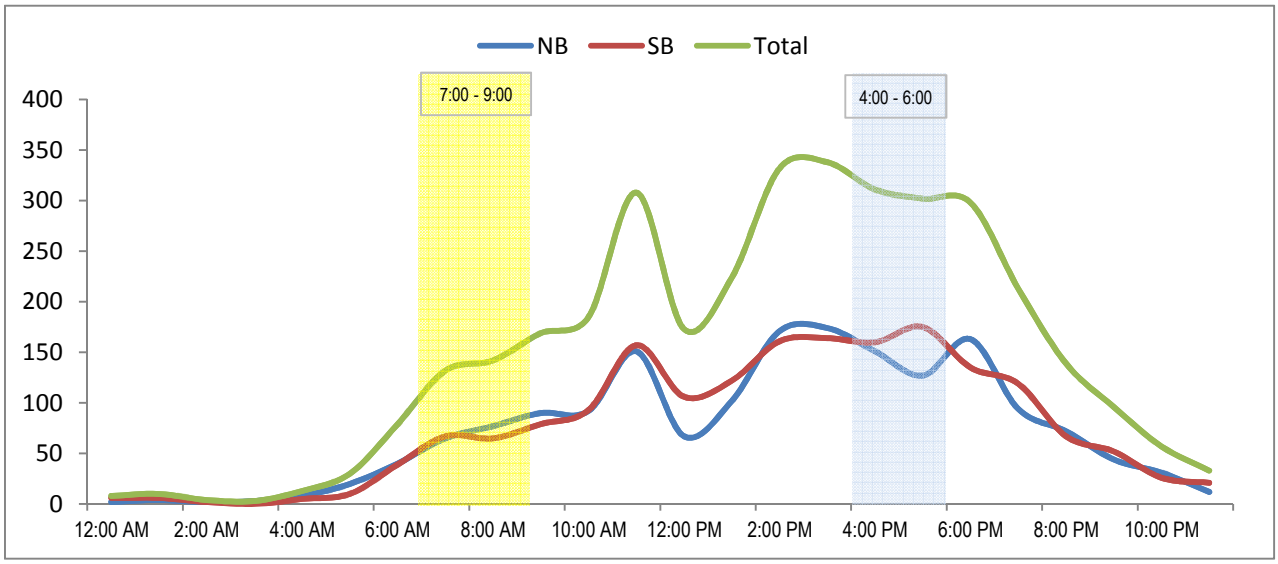
Weather: *Sunny*

AVC Proj. No: *15-0287*

24 Hour Segment Volume ***3,599***

Time	Hourly Volume NB	Hourly Volume SB	Hourly Volume Total	Time	Hourly Volume NB	Hourly Volume SB	Hourly Volume Total
12:00 AM - 1:00 AM	2	6	8	12:00 PM - 1:00 PM	67	106	173
1:00 AM - 2:00 AM	4	6	10	1:00 PM - 2:00 PM	102	122	224
2:00 AM - 3:00 AM	2	2	4	2:00 PM - 3:00 PM	171	161	332
3:00 AM - 4:00 AM	3	0	3	3:00 PM - 4:00 PM	174	164	338
4:00 AM - 5:00 AM	8	5	13	4:00 PM - 5:00 PM	151	160	311
5:00 AM - 6:00 AM	20	10	30	5:00 PM - 6:00 PM	127	175	302
6:00 AM - 7:00 AM	40	39	79	6:00 PM - 7:00 PM	163	135	298
7:00 AM - 8:00 AM	65	67	132	7:00 PM - 8:00 PM	94	119	213
8:00 AM - 9:00 AM	77	65	142	8:00 PM - 9:00 PM	72	67	139
9:00 AM - 10:00 AM	90	79	169	9:00 PM - 10:00 PM	44	52	96
10:00 AM - 11:00 AM	92	93	185	10:00 PM - 11:00 PM	31	26	57
11:00 AM - 12:00 PM	151	157	308	11:00 PM - 12:00 AM	12	21	33
Total	**554**	**529**	**1,083**	**Total**	**1,208**	**1,308**	**2,516**

24-Hour NB Volume 1,762 ***24-Hour SB Volume 1,837***



RICK ENGINEERING COMPANY
Traffic Division

24 Hour Segment Count

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

AVC

Location: 4. 16th Street btw, Project Acess(Sun Valley Apartments Drive Way) and F Street

Orientation: *North-South*

Date of Count: *Thursday, January 08, 2015*

Analysts: *DASH*

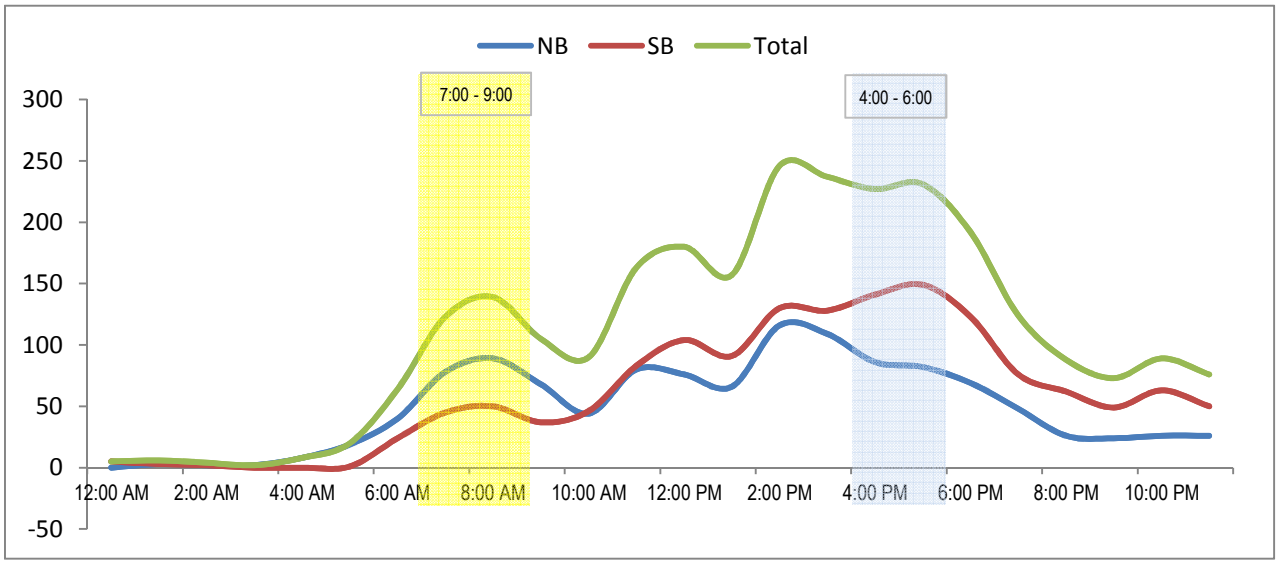
Weather: *Sunny*

AVC Proj. No: *15-0287*

24 Hour Segment Volume ***2,649***

Time	Hourly Volume NB	Hourly Volume SB	Hourly Volume Total	Time	Hourly Volume NB	Hourly Volume SB	Hourly Volume Total
12:00 AM - 1:00 AM	0	5	5	12:00 PM - 1:00 PM	76	104	180
1:00 AM - 2:00 AM	3	3	6	1:00 PM - 2:00 PM	66	91	157
2:00 AM - 3:00 AM	2	2	4	2:00 PM - 3:00 PM	116	130	246
3:00 AM - 4:00 AM	2	0	2	3:00 PM - 4:00 PM	109	128	237
4:00 AM - 5:00 AM	8	0	8	4:00 PM - 5:00 PM	86	141	227
5:00 AM - 6:00 AM	19	1	20	5:00 PM - 6:00 PM	82	149	231
6:00 AM - 7:00 AM	40	24	64	6:00 PM - 7:00 PM	69	123	192
7:00 AM - 8:00 AM	78	45	123	7:00 PM - 8:00 PM	48	76	124
8:00 AM - 9:00 AM	89	50	139	8:00 PM - 9:00 PM	26	62	88
9:00 AM - 10:00 AM	68	37	105	9:00 PM - 10:00 PM	24	49	73
10:00 AM - 11:00 AM	44	46	90	10:00 PM - 11:00 PM	26	63	89
11:00 AM - 12:00 PM	80	83	163	11:00 PM - 12:00 AM	26	50	76
Total	**433**	**296**	**729**	**Total**	**754**	**1,166**	**1,920**

24-Hour NB Volume 1,187 ***24-Hour SB Volume 1,462***



APPENDIX B

Significance Determination Thresholds

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE
AND
REPORT FORMAT AND CONTENT REQUIREMENTS

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

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4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The following significance guidelines should guide the evaluation of whether a significant impact to transportation and traffic will occur as a result of project implementation. A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary. Conversely, if a project does not propose any of the following, it will generally not be considered to have a significant effect on transportation and traffic, absent specific evidence of such an effect.

This section provides guidance for evaluating adverse environmental effects a project may have in relation to traffic and transportation. The guidelines for determining significance are organized into eight categories: road segments, intersections, two-lane highways, ramps, congestion management plan, hazards due to an existing transportation design feature, hazards to pedestrians or bicyclists, and public transportation.

Land Development Projects

Land Development projects are projects that may result in an increase in the density or intensity or use on a parcel or parcels of land. These projects include, but are not limited to subdivisions, use permits, rezones and general plan amendments. Land development projects, typically, require discretionary approval. Due to the increased intensity of uses, land development projects generate additional traffic onto the County's road network and can contribute towards traffic congestion. A traffic impact study is often required to fully assess potential traffic impacts that may result from implementation of the proposed project.

Road Improvement Projects

Road improvement projects are projects that can affect transportation system operations; including level of service and other performance measures. Projects may consist of increasing road capacity or improving the traffic operations on the County's road network. This section refers to stand alone road improvement projects that are not improvements associated with a proposed development. These projects are typically publicly initiated. Road improvement projects do not generate additional trips but, in some cases, may cause a redistribution of trips on the County's road network. Road improvement projects are typically one or more of the following; road widening, construction of new road, intersection improvements and operational improvements/road maintenance. Additional guidance on how to evaluate Publicly Initiated Road Improvement Projects is included as Attachment B of the Report Format and Content Requirements.

4.1 Road Segments

Pursuant to the County's General Plan Public Facilities Element (PFE Pg. XII-4-18), new development must provide improvements or other measures to mitigate traffic impacts to avoid:

(a) Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

(b) Reduction in LOS below "D" for off-site and on-site abutting Circulation 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 PFE, 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 motor vehicle 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 1. The levels in Table 1 are based upon average operating conditions on County roadways. It should be noted that these levels 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.

On-site Circulation Element Roads

PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- ***The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours except within the Otay Ranch and Harmony Grove Village plans as specified in the PFE, Implementation Measure 1.1.2.***

Off-site Circulation Element Roads

PFE, Transportation, Policy 1.1 also addresses offsite Circulation Element roads. It states, "new development shall provide off-site improvements designed to contribute to the overall achievement of a Level of Service D on Circulation Element Roads". Implementation Measure 1.1.3 addresses projects that would significantly impact

congestion on roads at LOS E or F. It states that new development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to attain a LOS to D or better or appropriate mitigation is provided. 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 level of service traffic impact on a road segment:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation 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 1, or***

- ***The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.***

Table 1
Measures of Significant Project Impacts to Congestion on Circulation 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

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.**

LOS E

The first significance criterion listed in Table 1 addresses roadways presently operating at LOS E. Based on these criteria, an impact from new development on an LOS E road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 200 ADT. Using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes.

Therefore, the addition of 200 ADT, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Significance criteria were also established for 4-lane and 6-lane roads operating at LOS E and are based upon the above 24 hour ADT significance criterion established for two-lane roads. The two-lane road criterion was doubled to determine impacts to four-lane roads and tripled to determine impacts to six-lane roads. This was considered to be conservative since the 24 hour per lane road capacity for a 4-lane road is more than double that of a two-lane road and the per lane capacity of a six-lane road is more than triple that of the two-lane road. For LOS E roads, the additional significance criteria are 400 ADT for a 4-lane road and 600 ADT for a 6-lane road.

Similar to the criteria for two-lane roads, 400 ADT for a 4-lane road and 600 ADT for a 6-lane road criteria would generate less than 25 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 2.4 minutes. The addition of 200 ADT per lane (400 ADT for a 4 lane road or 600 ADT for a 6 lane road), in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Road capacities based upon level of service for County roads can be found in the County's Public Road Standards, available online at http://www.sdcounty.ca.gov/dpw/land/rtelocs.html.

LOS F

The second significance criteria listed in Table 1 addresses roadways presently operating at LOS F. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater effect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads more stringent significance criteria was established when compared to that for LOS E. Based on this guidance, an impact from new development on an LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 100. Again, using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 12.5 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 4.8 minutes.

The addition of 100 ADT, in most cases, would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. The same approach used to determine significance criteria for 4-lane and 6-lane roads operating at LOS E was used to determine appropriate significance criteria for four-lane and six-lane roads operating at LOS F. Based on this approach, the significance criteria for a four-lane road (200 ADT) and for a six-lane road (300 ADT) would generate less than 12.5 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 4.8 minutes. The addition of 100 per lane ADT (200 ADT for a 4-lane road and 300 ADT for a 6-lane road) would, in most cases, not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway.

In summary, under extremely congested LOS F conditions, small changes and disruptions to the traffic flow can significantly affect traffic operations and additional project traffic can increase the likelihood or frequency of these events. Therefore, the LOS F ADT significance criteria was set at 100 ADT (50% of the LOS E criterion) to provide a higher level of assurance that the traffic allowed under the criterion would not significantly impact traffic operation on the road segment.

Non-Circulation Element Residential Streets

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots and not to carry through traffic, however, for projects that will substantially increase traffic volumes on residential streets, a comparison of the traffic volumes on the residential streets with the recommended design capacity must be provided. Recommended design capacities for residential non-Circulation Element streets are provided in the San Diego County Public and Private Road Standards. Traffic volume that exceeds the design capacity on residential streets may impact residences and should be analyzed on a case-by-case basis.

4.2 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections. Table 2 summarizes significant project impacts for signalized and unsignalized intersections.

Table 2
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

Notes:

1. A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues, which typically operate at LOS F. Also if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
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 direct 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 <u>and</u> the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

4.2.1 Signalized

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 level of service 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 2.***

- ***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.***

LOS E
The significance criterion for signalized intersections identified in Table 2 allows an increase in the overall delay at an intersection operating at LOS E of two seconds. This is consistent with the capacity limit contained in the SANDAG's CMP and guidelines established by the City of San Diego. A delay of two seconds is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low. Therefore, an increased wait time of two seconds, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS E is 2 seconds.

LOS F
The primary significance criterion for signalized intersections operating at LOS F conditions was based upon increased delay at the intersection. Under LOS F congested conditions, small changes and disruptions to the traffic flow to signalized intersections can have a greater effect on overall intersection operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic at signalized intersections operating at LOS F, a more stringent guideline was established when compared to signalized intersection operating at LOS E. A significance guideline of an increased delay of 1 second was established for signalized intersections operating at LOS F. An increase in the overall delay at an intersection of one second, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS F is 1 second.

Signalized intersections operating at LOS F also have the potential for substantial queuing at specific turning movements that may detrimentally effect overall intersection and/or road segment operations. Thus, an increase of peak hour trips to a critical move was also established as a secondary significance criterion for signalized intersections. A critical movement would be a movement or a lane at an intersection that is experiencing queuing or substantial delay and is affecting the overall operation of the

intersection. The increase in peak hour trips to a critical move is a measurement of how many cars can be added to an existing queue. The addition of more than five trips (peak hour) per critical movement will normally be considered a significant impact. This significance criterion was selected because the five or less additional trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver (5 peak hour trips equals one trip every 12 minutes or 720 seconds).

For LOS F intersections, the 5 peak hour trips to a critical movement would not be noticeable to the average driver since the one additional trip during the 12 minute interval on average would clear the traffic signal cycles well within the 12 minute period. It should also be noted that if the 5 additional peak hour trips arrived at the same time these trips would also clear the traffic cycle and existing queue lengths would be re-established.

4.2.2 Unsignalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact to an unsignalized intersection as listed in Table 2 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.***

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. As noted in Table 2 on page 15, significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

LOS E

The significance guidelines for unsignalized intersections identify a minimum number of trips added to a critical movement at an unsignalized intersection. Since the operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves, the significance guidelines for unsignalized intersections were based upon the number of trips added to a critical movement. This guideline directly relates to the number of vehicles that can be added to an existing queue that forms at the intersection. A significance criteria of (21) twenty-one or more trips (peak hour) per critical movement was used for LOS E conditions. Although delays drivers experience under LOS E condition may be noticeable, they are not yet considered unacceptable. Twenty trips spread out over the peak hour would not likely cause the intersection delay or existing queue lengths to become unacceptable. The twenty trips (peak hour) would not be noticeable to the average driver.

The operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves. Therefore, the significance guidelines for unsignalized intersections are based upon the number of peak hour trips added to a critical movement at that intersection. This guideline examines the number of vehicles that may be added to an existing queue that forms at the intersection by the additional traffic generated by a project. In LOS E situations, the delays that drivers experience are noticeable, but are not considered excessive. A peak hour increase of twenty trips to the critical movement of an unsignalized intersection would be, on average, one additional car every 3.0 minutes or 180 seconds. Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E condition, this would not be noticeable to the average driver and would not be considered a significant impact.

LOS F

For LOS F conditions, a significance level of 6 or more trips (peak hour) per critical movement was used. Five trips or less spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver. For example, 5 trips spread out over an hour would be one car every 12 minutes. This typically exceeds the average wait time in the queue and would not be noticeable to the average driver.

APPENDIX C

Intersection Calculation Sheets and ILV Calculation Sheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	71	29	194	68	185	13	386	87	107	597	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.89		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1603		1770	1659		1770	3441		1770	3514	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1603		1770	1659		1770	3441		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)	47	77	32	211	74	201	14	420	95	116	649	32
RTOR Reduction (vph)	0	16	0	0	101	0	0	14	0	0	2	0
Lane Group Flow (vph)	47	93	0	211	174	0	14	501	0	116	679	0
Parking (#/hr)		0										
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.5	11.3		15.2	22.0		0.9	41.3		9.3	49.7	
Effective Green, g (s)	4.5	11.3		15.2	22.0		0.9	41.3		9.3	49.7	
Actuated g/C Ratio	0.05	0.12		0.16	0.23		0.01	0.44		0.10	0.52	
Clearance Time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	84	191		284	385		16	1500		173	1844	
v/s Ratio Prot	0.03	0.06		c0.12	c0.10		0.01	0.15		c0.07	c0.19	
v/s Ratio Perm												
v/c Ratio	0.56	0.49		0.74	0.45		0.88	0.33		0.67	0.37	
Uniform Delay, d1	44.1	39.0		37.9	31.2		46.8	17.6		41.2	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	0.7		10.0	0.3		158.2	0.6		7.8	0.6	
Delay (s)	48.7	39.7		47.9	31.5		205.1	18.2		49.0	13.8	
Level of Service	D	D		D	C		F	B		D	B	
Approach Delay (s)		42.4			38.6			23.2			18.9	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	94.7	Sum of lost time (s)	17.6
Intersection Capacity Utilization	55.4%	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)	9	2	48	10	4	70	47	639	20	47	798	33
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)	10	2	52	11	4	76	51	695	22	51	867	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								993			590	
pX, platoon unblocked	0.87	0.87	0.86	0.87	0.87	1.00	0.86			1.00		
vC, conflicting volume	1515	1806	452	1397	1813	358	903			716		
vC1, stage 1 conf vol	988	988		808	808							
vC2, stage 2 conf vol	528	818		589	1005							
vCu, unblocked vol	1267	1603	52	1130	1611	349	574			708		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	94	96	98	88	94			94		
cM capacity (veh/h)	255	246	869	287	244	645	860			883		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	91	51	463	253	51	578	325
Volume Left	10	11	51	0	0	51	0	0
Volume Right	52	76	0	0	22	0	0	36
cSH	598	526	860	1700	1700	883	1700	1700
Volume to Capacity	0.11	0.17	0.06	0.27	0.15	0.06	0.34	0.19
Queue Length 95th (ft)	9	16	5	0	0	5	0	0
Control Delay (s)	11.7	13.3	9.5	0.0	0.0	9.3	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.7	13.3	0.6			0.5		
Approach LOS	B	B						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	56	1	2	98	2	0
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	1	2	107	2	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			62		172	61
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			62		172	61
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1541		817	1004

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	62	109	2
Volume Left	0	2	2
Volume Right	1	0	0
cSH	1700	1541	817
Volume to Capacity	0.04	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.2	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	10	81	22	1	12	58	642	25	11	755	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.93			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693			1722		1770	3519		1770	3502	
Flt Permitted		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1693			1722		1770	3519		1770	3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	11	88	24	1	13	63	698	27	12	821	61
RTOR Reduction (vph)	0	42	0	0	12	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	119	0	0	26	0	63	724	0	12	879	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		10.2			4.2		4.6	43.9		0.9	40.2	
Effective Green, g (s)		10.2			4.2		4.6	43.9		0.9	40.2	
Actuated g/C Ratio		0.13			0.05		0.06	0.57		0.01	0.52	
Clearance Time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		225			94		106	2016		20	1837	
v/s Ratio Prot		c0.07			c0.01		c0.04	c0.21		0.01	c0.25	
v/s Ratio Perm												
v/c Ratio		0.53			0.27		0.59	0.36		0.60	0.48	
Uniform Delay, d1		31.0			34.7		35.1	8.8		37.7	11.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			1.6		8.6	0.5		40.2	0.9	
Delay (s)		33.2			36.3		43.7	9.3		77.8	12.4	
Level of Service		C			D		D	A		E	B	
Approach Delay (s)		33.2			36.3			12.0			13.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	17.4
Intersection Capacity Utilization	47.1%	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 (vph)	131	85	18	150	77	101	15	618	134	80	484	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.91		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1632		1770	1704		1770	3444		1770	3509	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1632		1770	1704		1770	3444		1770	3509	
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)	142	92	20	163	84	110	16	672	146	87	526	32
RTOR Reduction (vph)	0	9	0	0	50	0	0	12	0	0	2	0
Lane Group Flow (vph)	142	103	0	163	144	0	16	806	0	87	556	0
Parking (#/hr)		0										
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.2	10.6		13.0	12.4		2.3	40.2		6.8	44.7	
Effective Green, g (s)	11.2	10.6		13.0	12.4		2.3	40.2		6.8	44.7	
Actuated g/C Ratio	0.13	0.12		0.15	0.14		0.03	0.46		0.08	0.51	
Clearance Time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	224	196		260	239		46	1569		136	1778	
v/s Ratio Prot	0.08	0.06		c0.09	c0.08		0.01	c0.23		c0.05	0.16	
v/s Ratio Perm												
v/c Ratio	0.63	0.53		0.63	0.60		0.35	0.51		0.64	0.31	
Uniform Delay, d1	36.6	36.4		35.3	35.6		42.2	17.1		39.5	12.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.2		4.7	2.9		1.7	1.2		7.1	0.5	
Delay (s)	40.8	37.6		40.0	38.5		43.9	18.3		46.6	13.2	
Level of Service	D	D		D	D		D	B		D	B	
Approach Delay (s)		39.4			39.2			18.8			17.7	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	17.6
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	7	42	2	1	148	64	900	55	98	815	19
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)	7	8	46	2	1	161	70	978	60	107	886	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								993			590	
pX, platoon unblocked	0.87	0.87	0.83	0.87	0.87	0.91	0.83			0.91		
vC, conflicting volume	1899	2286	453	1853	2267	519	907			1038		
vC1, stage 1 conf vol	1109	1109		1147	1147							
vC2, stage 2 conf vol	790	1177		705	1120							
vCu, unblocked vol	1292	1736	0	1239	1713	283	478			851		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	95	95	99	99	75	92			85		
cM capacity (veh/h)	162	146	900	208	182	652	897			715		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	164	70	652	386	107	591	316
Volume Left	7	2	70	0	0	107	0	0
Volume Right	46	161	0	0	60	0	0	21
cSH	419	624	897	1700	1700	715	1700	1700
Volume to Capacity	0.14	0.26	0.08	0.38	0.23	0.15	0.35	0.19
Queue Length 95th (ft)	12	26	6	0	0	13	0	0
Control Delay (s)	15.0	12.8	9.4	0.0	0.0	10.9	0.0	0.0
Lane LOS	C	B	A			B		
Approach Delay (s)	15.0	12.8	0.6			1.1		
Approach LOS	C	B						

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	147	10	1	82	2	1
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)	160	11	1	89	2	1
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			171		257	165
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			171		257	165
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1407		732	879

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	171	90	3
Volume Left	0	1	2
Volume Right	11	0	1
cSH	1700	1407	775
Volume to Capacity	0.10	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.7
Approach LOS			A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	10	110	52	22	39	121	970	91	27	739	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.93			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1691			1737		1770	3494		1770	3502	
Flt Permitted		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1691			1737		1770	3494		1770	3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	11	120	57	24	42	132	1054	99	29	803	61
RTOR Reduction (vph)	0	41	0	0	18	0	0	4	0	0	4	0
Lane Group Flow (vph)	0	179	0	0	105	0	132	1149	0	29	860	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		13.8			10.3		9.9	40.8		1.8	32.7	
Effective Green, g (s)		13.8			10.3		9.9	40.8		1.8	32.7	
Actuated g/C Ratio		0.16			0.12		0.12	0.49		0.02	0.39	
Clearance Time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		277			212		208	1695		37	1361	
v/s Ratio Prot		c0.11			c0.06		c0.07	c0.33		0.02	0.25	
v/s Ratio Perm												
v/c Ratio		0.65			0.49		0.63	0.68		0.78	0.63	
Uniform Delay, d1		32.9			34.5		35.4	16.6		41.0	20.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			1.8		6.2	2.2		67.8	2.2	
Delay (s)		38.0			36.3		41.6	18.8		108.7	23.1	
Level of Service		D			D		D	B		F	C	
Approach Delay (s)		38.0			36.3			21.1			25.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	17.4
Intersection Capacity Utilization	59.4%	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)	43	71	29	194	68	186	13	388	87	109	607	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.89		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1603		1770	1658		1770	3442		1770	3515	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1603		1770	1658		1770	3442		1770	3515	
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)	47	77	32	211	74	202	14	422	95	118	660	32
RTOR Reduction (vph)	0	16	0	0	102	0	0	14	0	0	2	0
Lane Group Flow (vph)	47	93	0	211	174	0	14	503	0	118	690	0
Parking (#/hr)		0										
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.5	11.3		15.2	22.0		0.9	41.3		9.3	49.7	
Effective Green, g (s)	4.5	11.3		15.2	22.0		0.9	41.3		9.3	49.7	
Actuated g/C Ratio	0.05	0.12		0.16	0.23		0.01	0.44		0.10	0.52	
Clearance Time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	84	191		284	385		16	1501		173	1844	
v/s Ratio Prot	0.03	0.06		c0.12	c0.10		0.01	0.15		c0.07	c0.20	
v/s Ratio Perm												
v/c Ratio	0.56	0.49		0.74	0.45		0.88	0.34		0.68	0.37	
Uniform Delay, d1	44.1	39.0		37.9	31.2		46.8	17.6		41.3	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	0.7		10.0	0.3		158.2	0.6		8.5	0.6	
Delay (s)	48.7	39.7		47.9	31.5		205.1	18.2		49.8	13.9	
Level of Service	D	D		D	C		F	B		D	B	
Approach Delay (s)		42.4			38.6			23.2			19.1	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	94.7	Sum of lost time (s)	17.6
Intersection Capacity Utilization	55.7%	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 (veh/h)	9	2	48	22	5	80	47	639	23	50	798	33
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)	10	2	52	24	5	87	51	695	25	54	867	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								993			590	
pX, platoon unblocked	0.87	0.87	0.86	0.87	0.87	1.00	0.86			1.00		
vC, conflicting volume	1533	1816	452	1405	1821	360	903			720		
vC1, stage 1 conf vol	994	994		809	809							
vC2, stage 2 conf vol	539	822		596	1012							
vCu, unblocked vol	1283	1609	51	1135	1616	348	573			709		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	94	92	98	87	94			94		
cM capacity (veh/h)	247	243	870	286	242	645	860			882		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	116	51	463	257	54	578	325
Volume Left	10	24	51	0	0	54	0	0
Volume Right	52	87	0	0	25	0	0	36
cSH	591	483	860	1700	1700	882	1700	1700
Volume to Capacity	0.11	0.24	0.06	0.27	0.15	0.06	0.34	0.19
Queue Length 95th (ft)	9	23	5	0	0	5	0	0
Control Delay (s)	11.8	14.8	9.4	0.0	0.0	9.4	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.8	14.8	0.6			0.5		
Approach LOS	B	B						

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	56	1	2	98	0	2	0	0	1	0	23
Sign Control		Free			Free			Stop			Stop	
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)	7	61	1	2	107	0	2	0	0	1	0	25
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	107			62			210	185	61	185	186	107
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	107			62			210	185	61	185	186	107
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	1484			1541			724	705	1004	772	704	948

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	68	109	2	26
Volume Left	7	2	2	1
Volume Right	1	0	0	25
cSH	1484	1541	724	939
Volume to Capacity	0.00	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.7	0.2	10.0	8.9
Lane LOS	A	A	A	A
Approach Delay (s)	0.7	0.2	10.0	8.9
Approach LOS			A	A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	10	81	22	1	12	58	652	25	11	758	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.93			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693			1722		1770	3520		1770	3503	
Flt Permitted		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1693			1722		1770	3520		1770	3503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	11	88	24	1	13	63	709	27	12	824	61
RTOR Reduction (vph)	0	42	0	0	12	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	119	0	0	26	0	63	735	0	12	882	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		10.2			4.2		4.6	43.9		0.9	40.2	
Effective Green, g (s)		10.2			4.2		4.6	43.9		0.9	40.2	
Actuated g/C Ratio		0.13			0.05		0.06	0.57		0.01	0.52	
Clearance Time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		225			94		106	2017		20	1838	
v/s Ratio Prot		c0.07			c0.01		c0.04	c0.21		0.01	c0.25	
v/s Ratio Perm												
v/c Ratio		0.53			0.27		0.59	0.36		0.60	0.48	
Uniform Delay, d1		31.0			34.7		35.1	8.8		37.7	11.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			1.6		8.6	0.5		40.2	0.9	
Delay (s)		33.2			36.3		43.7	9.3		77.8	12.5	
Level of Service		C			D		D	A		E	B	
Approach Delay (s)		33.2			36.3			12.0			13.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	17.4
Intersection Capacity Utilization	47.2%	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 (vph)	131	85	18	150	77	102	15	628	134	81	488	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.91		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1632		1770	1704		1770	3446		1770	3473	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1632		1770	1704		1770	3446		1770	3473	
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)	142	92	20	163	84	111	16	683	146	88	530	75
RTOR Reduction (vph)	0	9	0	0	52	0	0	12	0	0	7	0
Lane Group Flow (vph)	142	103	0	163	143	0	16	817	0	88	598	0
Parking (#/hr)		0										
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.2	10.2		13.0	12.0		0.9	41.8		6.9	47.8	
Effective Green, g (s)	11.2	10.2		13.0	12.0		0.9	41.8		6.9	47.8	
Actuated g/C Ratio	0.13	0.11		0.15	0.13		0.01	0.47		0.08	0.53	
Clearance Time (s)	4.2	4.6		4.2	4.6		4.2	4.6		4.2	4.6	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	221	185		257	228		17	1609		136	1854	
v/s Ratio Prot	0.08	0.06		c0.09	c0.08		0.01	c0.24		c0.05	0.17	
v/s Ratio Perm												
v/c Ratio	0.64	0.56		0.63	0.63		0.94	0.51		0.65	0.32	
Uniform Delay, d1	37.2	37.5		36.0	36.6		44.3	16.7		40.1	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	2.1		5.0	3.8		187.2	1.1		7.7	0.5	
Delay (s)	42.0	39.6		41.1	40.5		231.5	17.8		47.8	12.2	
Level of Service	D	D		D	D		F	B		D	B	
Approach Delay (s)		40.9			40.7			21.9			16.7	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	17.6
Intersection Capacity Utilization	58.3%	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)	6	8	42	7	2	152	64	900	66	108	815	19
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)	7	9	46	8	2	165	70	978	72	117	886	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								993			590	
pX, platoon unblocked	0.87	0.87	0.83	0.87	0.87	0.91	0.83			0.91		
vC, conflicting volume	1926	2320	453	1881	2295	525	907			1050		
vC1, stage 1 conf vol	1131	1131		1153	1153							
vC2, stage 2 conf vol	795	1189		728	1141							
vCu, unblocked vol	1310	1762	0	1258	1732	283	472			859		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	94	95	96	99	75	92			83		
cM capacity (veh/h)	151	135	898	204	175	650	899			708		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	61	175	70	652	398	117	591	316
Volume Left	7	8	70	0	0	117	0	0
Volume Right	46	165	0	0	72	0	0	21
cSH	384	576	899	1700	1700	708	1700	1700
Volume to Capacity	0.16	0.30	0.08	0.38	0.23	0.17	0.35	0.19
Queue Length 95th (ft)	14	32	6	0	0	15	0	0
Control Delay (s)	16.1	14.0	9.3	0.0	0.0	11.1	0.0	0.0
Lane LOS	C	B	A			B		
Approach Delay (s)	16.1	14.0	0.6			1.3		
Approach LOS	C	B						

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	147	10	1	82	1	6	0	2	0	0	10
Sign Control		Free			Free			Stop			Stop	
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)	24	160	11	1	89	1	7	0	2	0	0	11
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			171			316	305	165	307	310	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			171			316	305	165	307	310	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			99	100	100	100	100	99
cM capacity (veh/h)	1505			1407			622	598	879	636	594	968

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	195	91	9	11
Volume Left	24	1	7	0
Volume Right	11	1	2	11
cSH	1505	1407	671	968
Volume to Capacity	0.02	0.00	0.01	0.01
Queue Length 95th (ft)	1	0	1	1
Control Delay (s)	1.0	0.1	10.4	8.8
Lane LOS	A	A	B	A
Approach Delay (s)	1.0	0.1	10.4	8.8
Approach LOS			B	A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	10	110	52	22	39	121	974	91	27	749	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.93			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1691			1737		1770	3494		1770	3502	
Flt Permitted		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1691			1737		1770	3494		1770	3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	11	120	57	24	42	132	1059	99	29	814	61
RTOR Reduction (vph)	0	41	0	0	18	0	0	4	0	0	4	0
Lane Group Flow (vph)	0	179	0	0	105	0	132	1154	0	29	871	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		13.8			10.3		9.9	40.8		1.8	32.7	
Effective Green, g (s)		13.8			10.3		9.9	40.8		1.8	32.7	
Actuated g/C Ratio		0.16			0.12		0.12	0.49		0.02	0.39	
Clearance Time (s)		4.6			4.0		4.2	4.6		4.2	4.6	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		277			212		208	1695		37	1361	
v/s Ratio Prot		c0.11			c0.06		c0.07	c0.33		0.02	0.25	
v/s Ratio Perm												
v/c Ratio		0.65			0.49		0.63	0.68		0.78	0.64	
Uniform Delay, d1		32.9			34.5		35.4	16.6		41.0	20.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			1.8		6.2	2.2		67.8	2.3	
Delay (s)		38.0			36.3		41.6	18.9		108.7	23.2	
Level of Service		D			D		D	B		F	C	
Approach Delay (s)		38.0			36.3			21.2			26.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	17.4
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

EXISTING AM

INTERSECTION

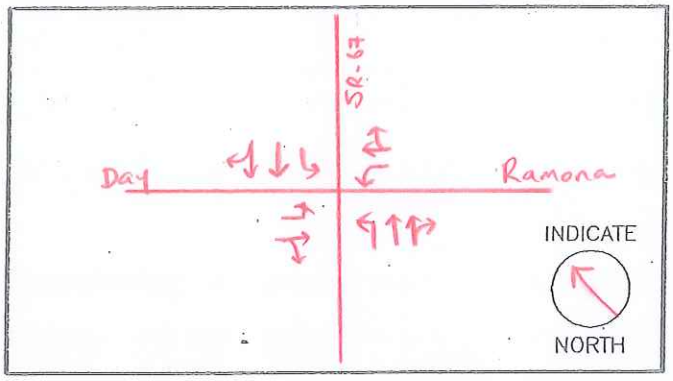
Signalized Intersection
CAPACITY ANALYSIS

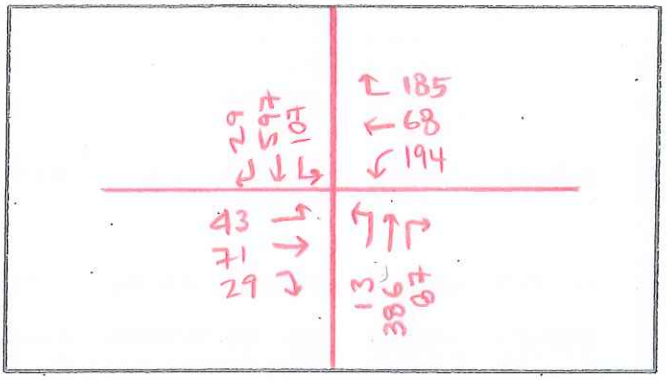
INTERSECTION Ramona St and Main St (SR-67) DIST. CO. RTE. P.M. 11 / SR - 67

BY AE DATE 10/11/2013

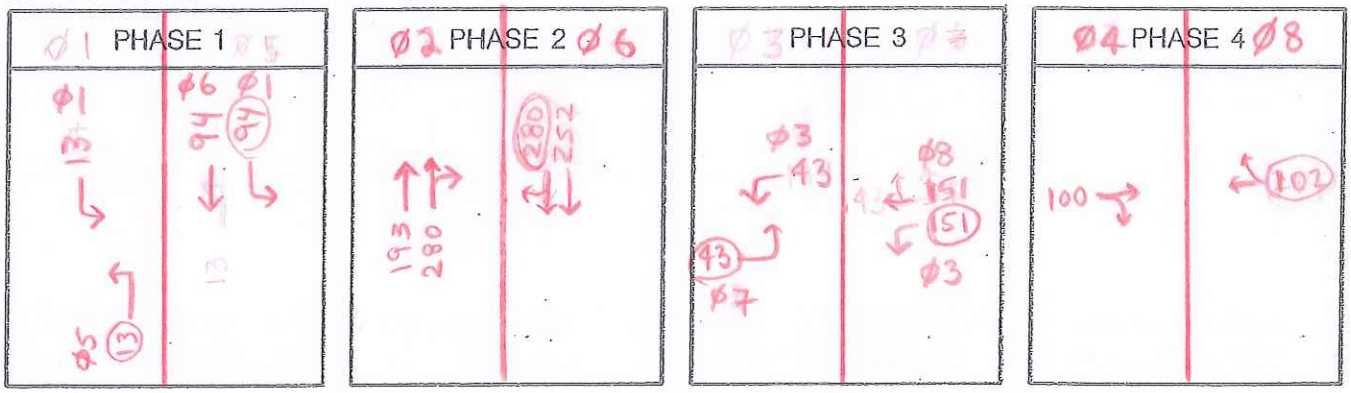
TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
13 / 94	280	43 / 151	102

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
683

☑ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING PM

INTERSECTION

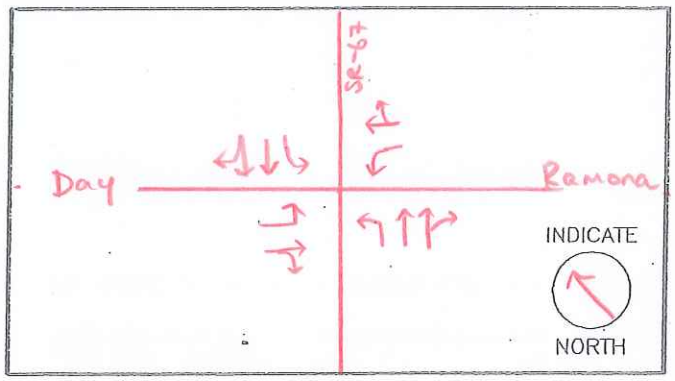
Signalized Intersection
CAPACITY ANALYSIS

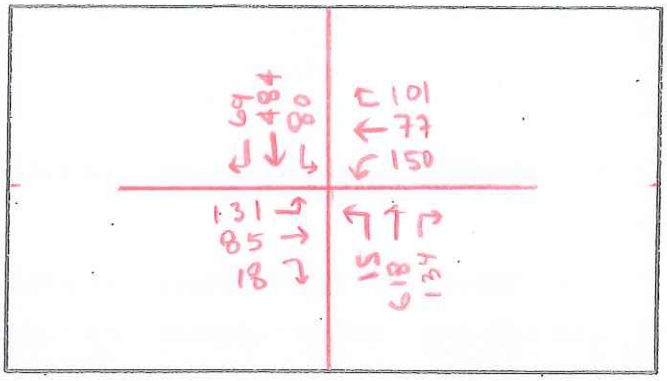
INTERSECTION Ramona St and Main St (SR-67) DIST. CO. RTE. P.M. 11 / SR-67

BY AE DATE 10/11/2013

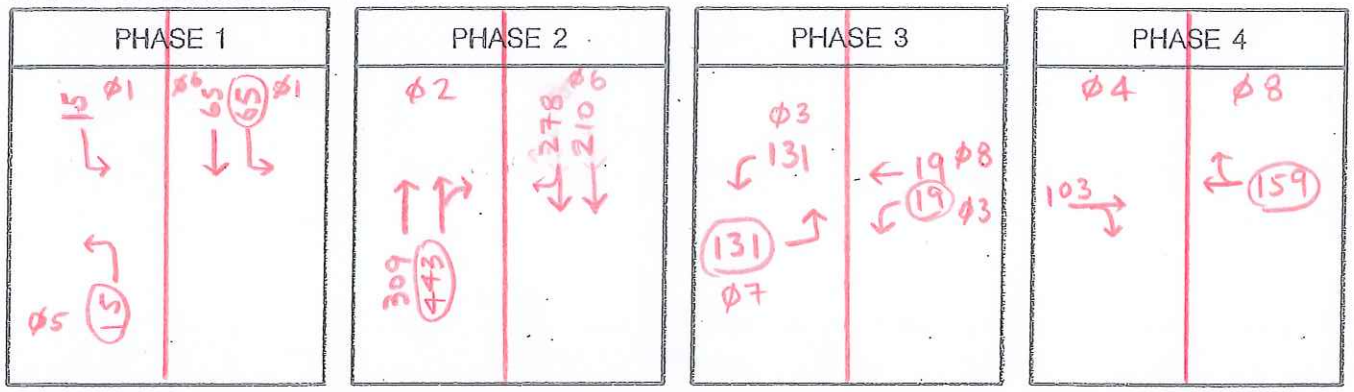
TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1		PHASE 2	PHASE 3		PHASE 4
15	65	443	131	19	159

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
832

☑ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + PROJECT AM

INTERSECTION

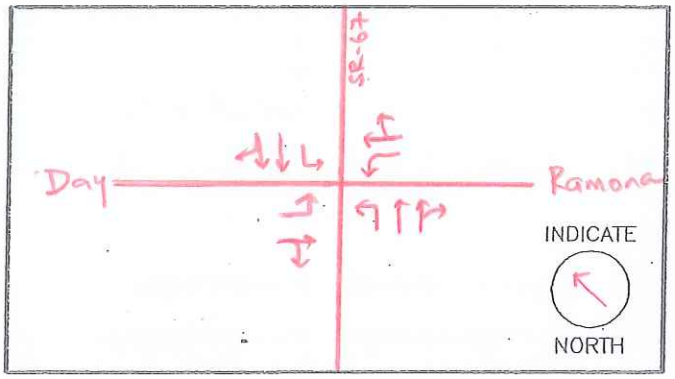
Signalized Intersection
CAPACITY ANALYSIS

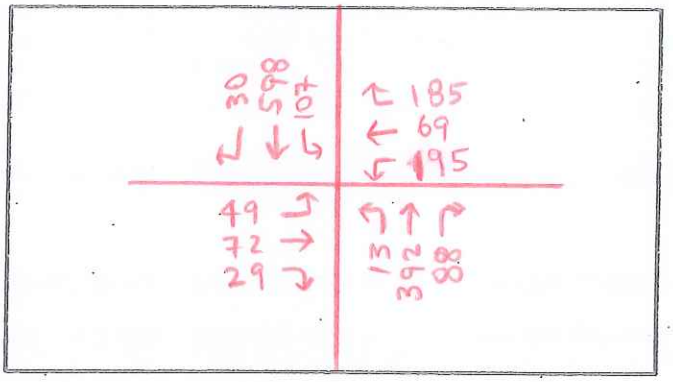
INTERSECTION Ramona St and Main St (SR-67) DIST. CO. RTE. P.M. 11 / SR-67

BY AE DATE 10/11/2013

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1		PHASE 2		PHASE 3		PHASE 4	
Ø1	Ø6 Ø1	Ø2	Ø6	Ø3	Ø8	Ø4	Ø8
3	97 (94)	196 (284)	287 252	49	146 (146)	101	(108)
(13)	9			(49)	3		
Ø5				Ø7			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1		PHASE 2	PHASE 3		PHASE 4
13	94	284	49	146	108

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
694

- ☑ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + PROJECT PM

INTERSECTION

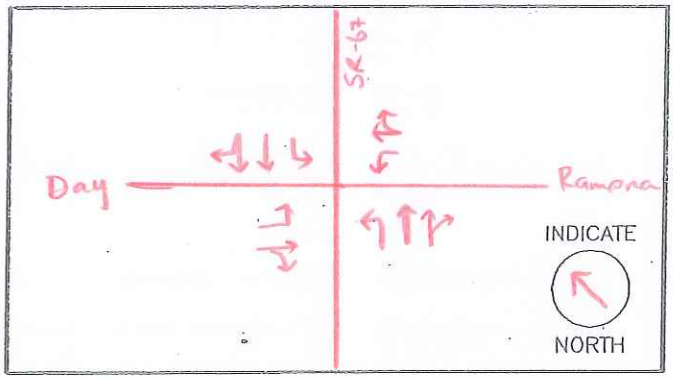
Signalized Intersection
CAPACITY ANALYSIS

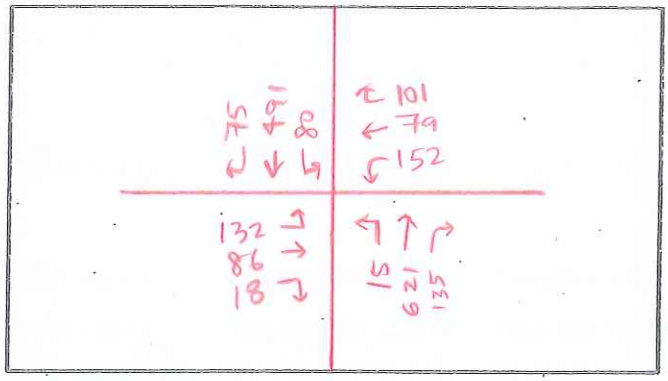
INTERSECTION Ramona St and Main street (SR-67) DIST. CO. RTE. P.M. 11 / SR-67

BY AE DATE 10/11/2013

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1		PHASE 2		PHASE 3		PHASE 4	
φ1 15	φ6 65 φ1	φ2	φ6 288 213	φ3 132	φ8 20	φ4	φ8
15 φ5		311 445		132 φ7	20 φ3	104	160

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1		PHASE 2	PHASE 3		PHASE 4
15	65	445	132	20	160

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
837

☑ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING AM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

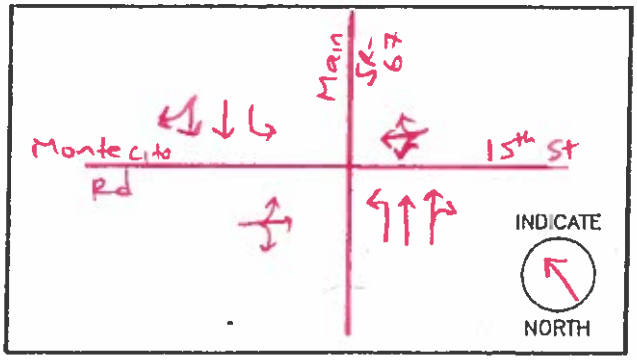
INTERSECTION Main St (SR-67) and 15th St - Montecito Rd

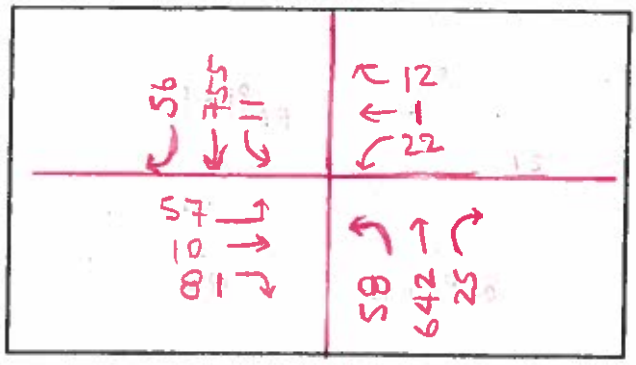
DIST. CO. RTE. P.M. 11 / SR-67

BY AE DATE 01/14/15

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
11 11 47 47	433 378 298 322	148	35

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
58	433	148	35

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
674

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

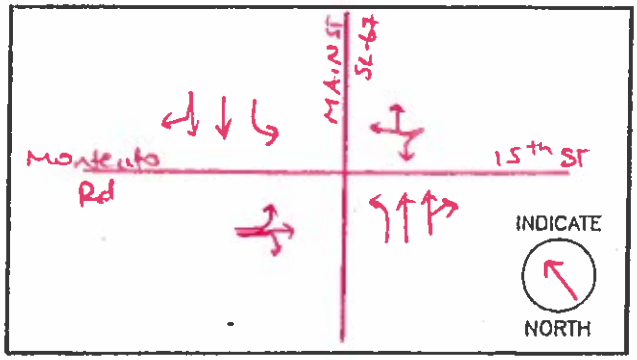
INTERSECTION Main St (SR-67) and 15th St - Monte Vista Rd

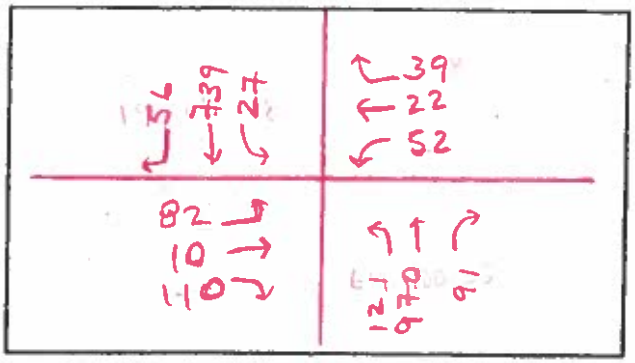
DIST. CO. RTE. P.M. 11/SR-67

BY AE DATE 01/14/15

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
27 27 34 31 92 92	425 370 438 529	202	113

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
121	529	202	113

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
965

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + PROJECT AM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

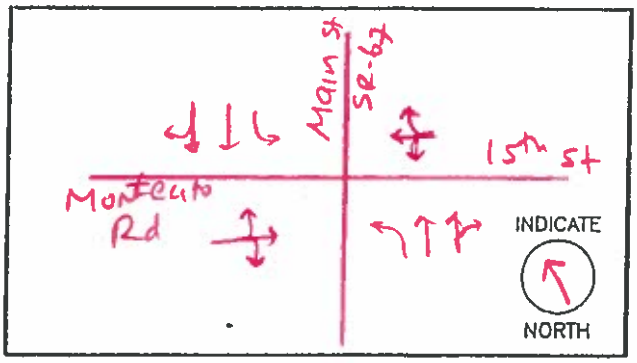
INTERSECTION Main St (SR-67) and 15th St - Montecito Rd

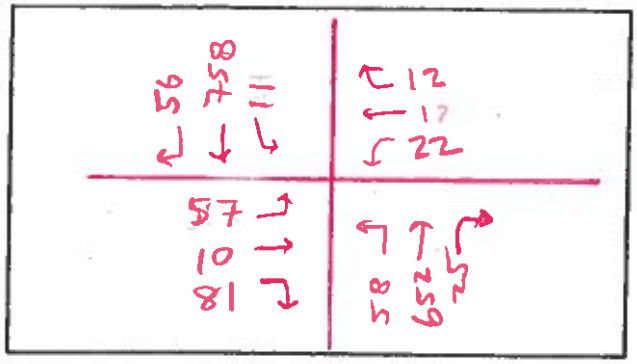
DIST. CO. RTE. P.M. 11/SR-67

BY AE DATE 01/14/15

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
71 11 47 47	435 379 303 327	148	35

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
58	435	148	35

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
676

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + PROJECT PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

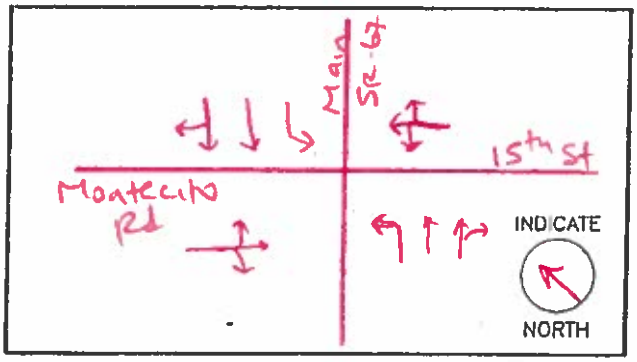
INTERSECTION MAIN ST (SR-67) and 15th St. Montecito Rd

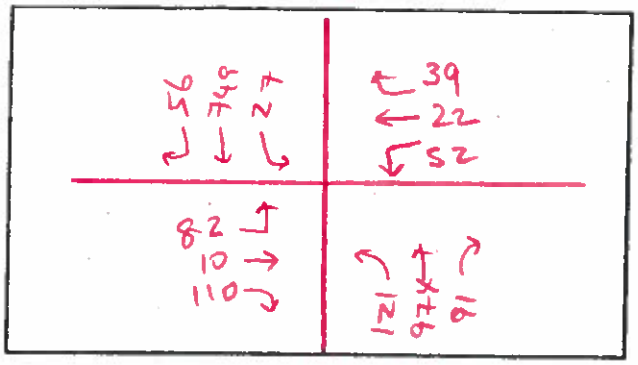
DIST. CO. RTE. P.M. 11/SR-67

BY AE DATE 01/14/15

TIME _____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
27 27 94 94	430 375 440 531	202	113

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
121	531	202	113

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
967

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS: