Focused Traffic Evaluation

for:

Eastvale Marketplace

In the City of Eastvale

Prepared for:

Evergreen Devco, Inc.

June, 2015
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FOCUSED TRAFFIC EVALUATION
FOR THE
EASTVALE MARKETPLACE
PROJECT

IN THE CITY OF EASTVALE

Prepared for:

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June, 2015

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FOCUSED TRAFFIC EVALUATION FOR THE EASTVALE MARKETPLACE PROJECT IN THE CITY OF EASTVALE

INTRODUCTION AND SUMMARY

This report has been prepared to provide a focused traffic evaluation of the proposed Eastvale Marketplace Project in the City of Eastvale. The project is located on the northeast corner of Limonite Avenue at Sumner Avenue in the City of Eastvale. The project site is shown in its regional setting on the vicinity map on Figure 1.

The project site is currently vacant. The project applicant proposes to construct an approximately 71,000-square-foot commercial center consisting of a grocery store, a bank, a tire store, and retail. The purpose of this focused traffic analysis is to evaluate the project access and circulation, and traffic-related impacts on the intersection of Limonite Avenue at Sumner Avenue due to the development of the proposed project.

The study will evaluate project-related traffic impacts at the intersection of Limonite Avenue at Sumner Avenue, and provide a discussion and analysis of the site circulation provisions, including site access, sight distance, and queuing. If applicable, the report will identify necessary mitigation measures associated with project traffic impacts. The following study scenarios will be analyzed:

- Existing Conditions
- Opening Year 2017 Conditions with Project

Project Description

The project site is a 7.64-acre parcel located on the northeast corner of Limonite Avenue at Sumner Avenue. The proposed project is approximately 71,000 square feet of commercial center. A copy of the proposed site plan is provided on Figure 2.

The project proposes to take access via one full-movement driveway on Sumner Avenue and one right-in/right-out/left-in driveway on Limonite Avenue.

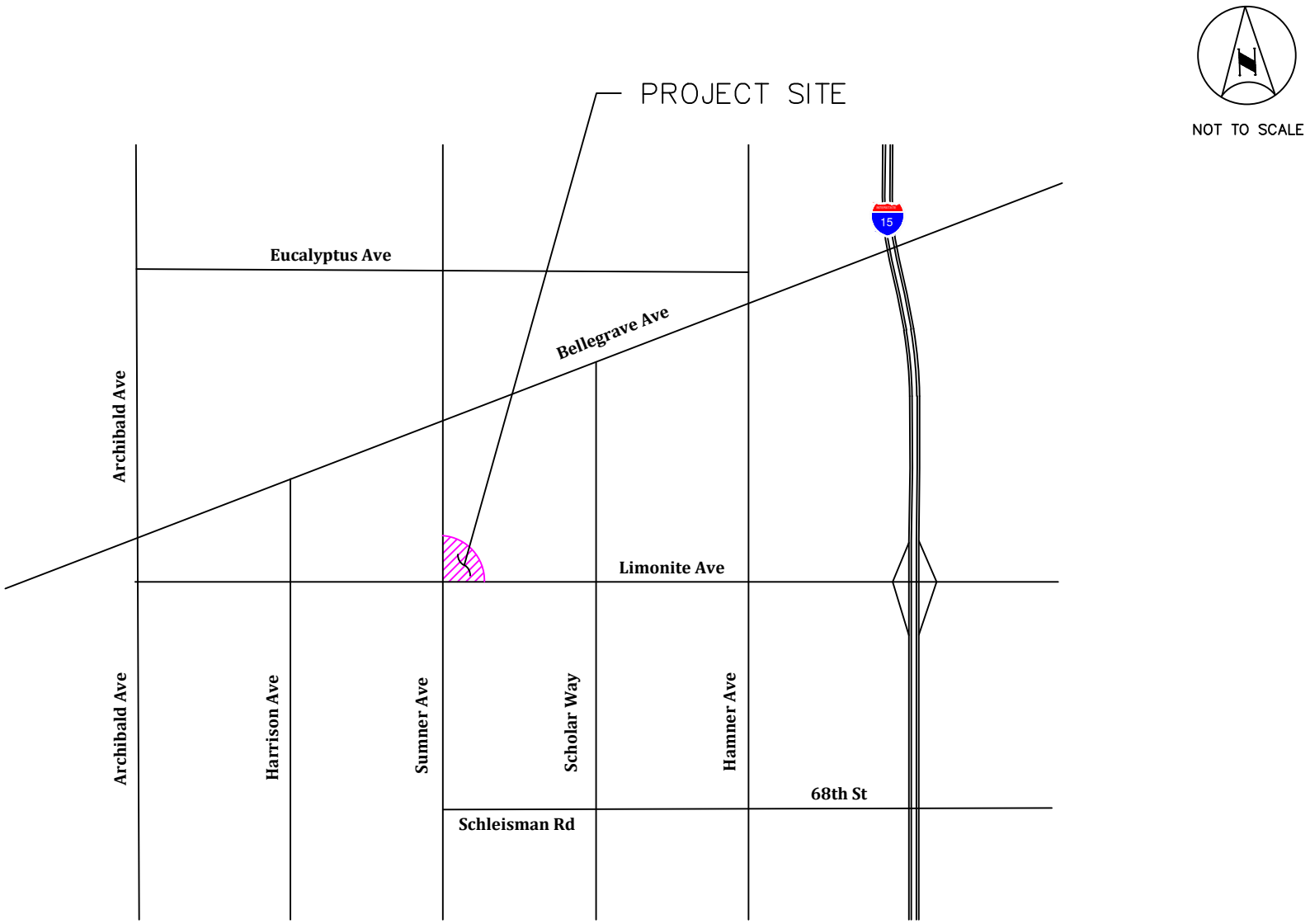
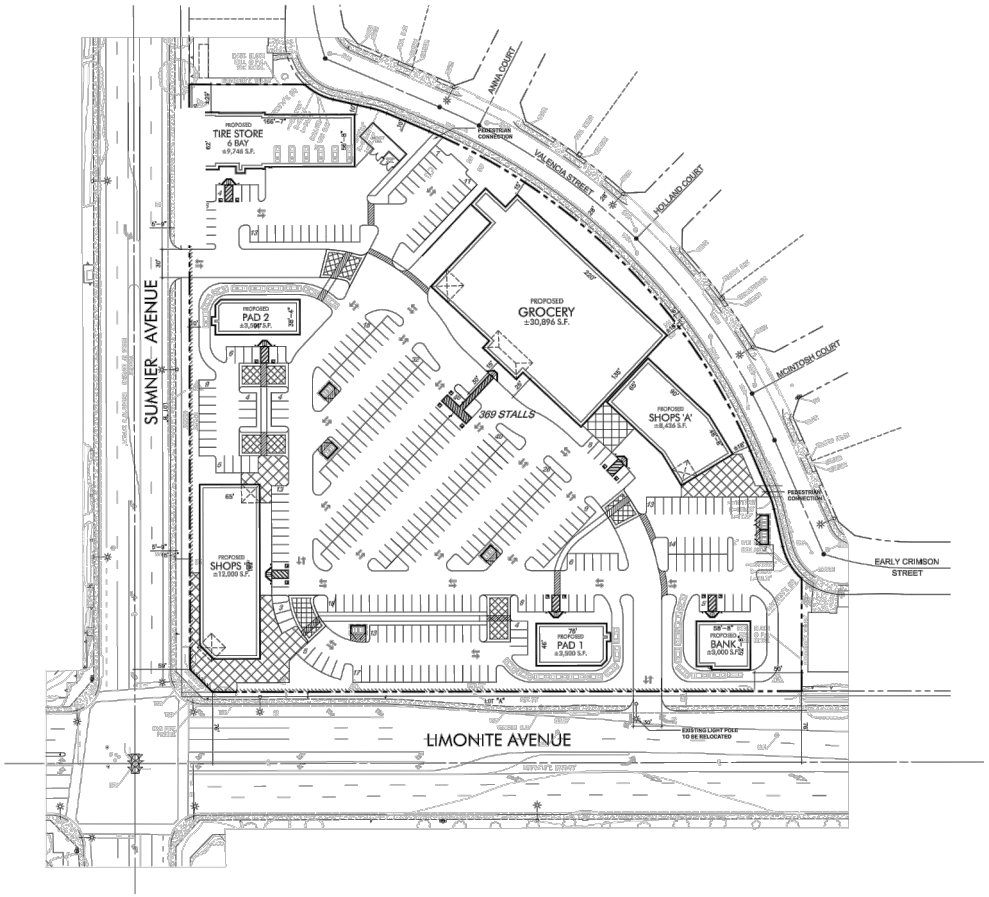


FIGURE 1
VICINITY MAP

NOT TO SCALE



NEW SHOPPING CENTER AT EASTVALE
NEC SUMNER AVENUE & LIMONITE AVENUE
EASTVALE, CALIFORNIA
EVERGREEN DEVCO, INC.
2390 E. CAMELBACK ROAD, SUITE 410 PHOENIX, AZ 85016

FIGURE 2
PROJECT SITE PLAN

Kimley»Horn

EXISTING TRAFFIC CONDITIONS

Existing traffic count data was collected in May of 2015 for a typical weekday at the following locations:

- Intersection
  - Limonite Avenue at Sumner Avenue
- Roadway Segments
  - Limonite Avenue east of Sumner Avenue
  - Sumner Avenue north of Limonite Avenue

Existing lane configurations, peak hour turning movement traffic volumes at the study intersection, and average daily traffic (ADT) on roadway segments are shown on Figure 3. Copies of the traffic count data forms are provided in *Appendix A* of this report.

Existing peak hour operations were evaluated using the Highway Capacity Manual 2010 (HCM 2010) methodology for signalized intersections. The results of the analysis are summarized on Table 1. Review of this table shows that the intersection of Limonite Avenue at Sumner Avenue is currently operating at Level of Service D or better during both peak hours for weekday operations.

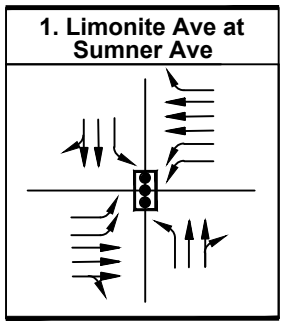
Roadway level of service analysis was conducted based on the roadway capacities found in the Eastvale General Plan. The results of the roadway analysis for Existing Conditions are shown on Table 2. Review of this table indicates that all study roadway segments are currently operating at Level of Service A.

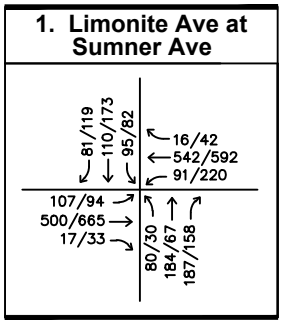
FORECAST TRAFFIC

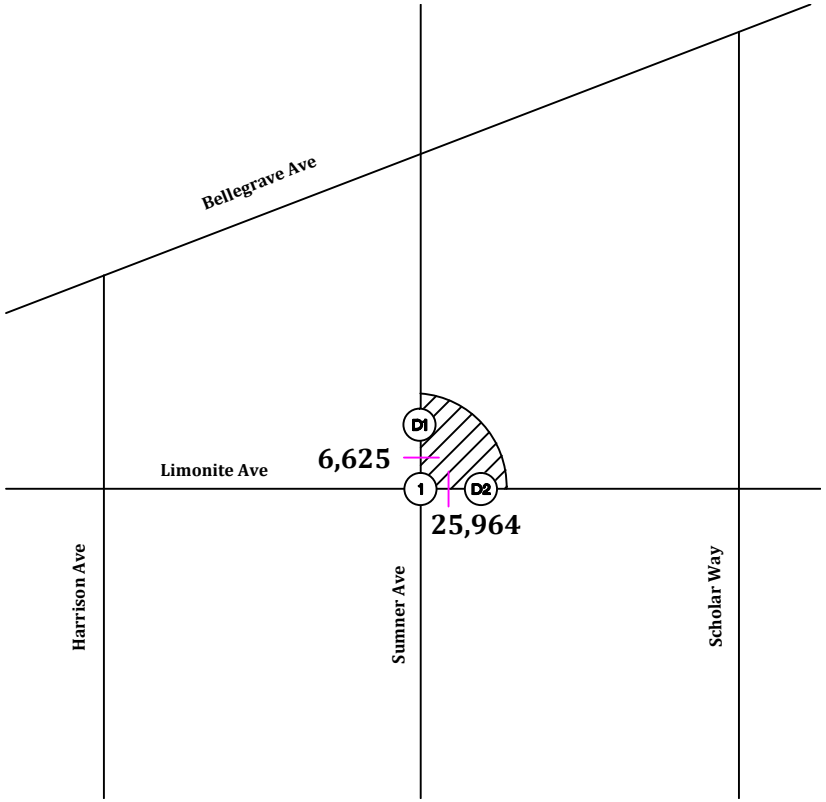
Project Traffic

Daily and peak hour trips were estimated for the proposed project using the Institute of Transportation Engineers (ITE Trip Generation Manual (9th Edition) trip generation rates for Shopping Center (Land Use 820). The ITE trip rates and the estimated project trip generation are shown on Table 3. The project is estimated to generate approximately 2,945 new vehicle trips on a daily basis, with 68 trips in the morning peak hour and 174 trips in the evening peak hour.

Trip distribution assumptions for the project were developed taking into account the proposed site uses and proximity to local residents who would use the shopping center. The trip distribution assumptions were applied to the trip generation estimates for the project.







NOT TO SCALE

LEGEND:

(X)	= Study Intersection
(DX)	= Driveway Intersection
	= Signal
XX/YY	= AM/PM Peak Hour Turning Movement Volumes
X,XXX	= ADT

FIGURE 3
EXISTING LANE CONFIGURATION AND EXISTING TRAFFIC VOLUMES

Kimley»Horn

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Limonite Avenue at Sumner Avenue	S	39.1	D	39.6	D

Notes:
Bold and shaded values indicate intersections operating at LOS E or F or significant impact to intersection per City standards.
At a signalized intersection, delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the average vehicle delay on the worst movement.
Delay values are based on the methodology outlined in the 2010 Highway Capacity Manual.
S = Signalized
U = Unsignalized

TABLE 2
SUMMARY OF ROADWAY SEGMENT ANALYSIS
EXISTING CONDITIONS

Roadway	Segment	Roadway Classification	LOS **E** Capacity	Daily Traffic Volume	V/C	LOS
Limonite Avenue	East of Sumner Avenue	Urban Arterial	53,000	25,964	0.490	A
Sumner Avenue	North of Limonite Avenue	Major Collector	18,000	6,625	0.368	A

Notes: V/C = Volume-to-Capacity ratio, LOS = Level of Service

Bold V/C and LOS values indicate a deficient Level of Service, based on City of Eastvale General Plan Policy

TABLE 3
SUMMARY OF PROJECT TRIP GENERATION
EVERGREEN SHOPPING CENTER - LIMONITE AND SUMNER

Land Use	ITE Code	Unit	Trip Generation Rates [1] Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Shopping Center	820	KSF	42.700	0.595	0.365	0.960	1.781	1.929	3.710

Land Use	Quantity	Unit	Trip Generation Estimates Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Shopping Center	71.078	KSF	3,035	42	26	68	127	137	264
Pass-By Reduction for Retail (PM - 34%) [2]			-90	0	0	0	-43	-47	-90
Total Project Trips			2,945	42	26	68	84	90	174

[1] Source: Institute of Transportation Engineers publication: Trip Generation Manual, 9th Edition
[2] Source: Institute of Transportation Engineers publication "Trip Generation Handbook, 2nd Edition"

Opening Year 2017

Opening Year 2017 Plus Project conditions include the addition of project traffic, plus an annual background growth factor of 1 percent per year to conservatively account for growth in surrounding areas, and traffic from cumulative projects. Cumulative projects consist of projects that are approved but not yet built, built but not fully occupied, and projects that are in various stages of the application and approval process, but have not yet been approved. Opening Year 2017 with Project peak hour traffic volumes are shown on Figure 4.

Peak hour operations for Opening Year 2017 With Project conditions were evaluated and the results of the analysis are summarized on Table 4. Review of this table shows that the study intersection of Limonite Avenue at Sumner Avenue would operate at LOS D or better during both peak hours without and with the addition of project traffic. Intersection analysis worksheets are provided in *Appendix B* of this report.

Roadway level of service analysis was conducted for Opening Year 2017 With Project conditions. The results of the roadway analysis are shown on Table 5. Review of this table indicates that all study roadway segments are forecasted to operate at Level of Service C or better.

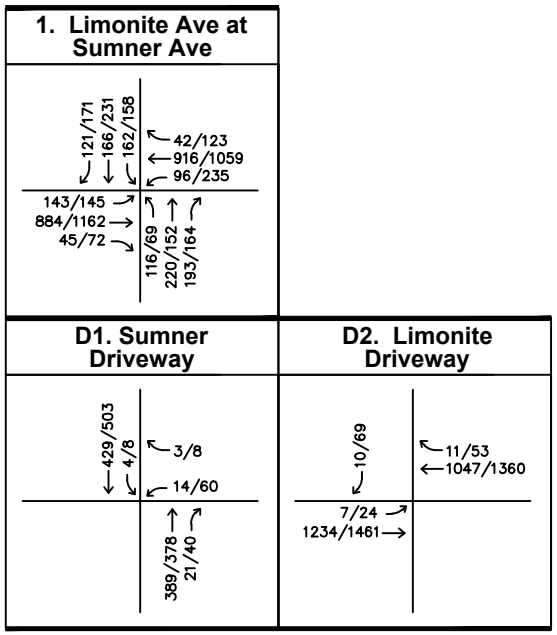
SITE ACCESS AND CIRCULATION

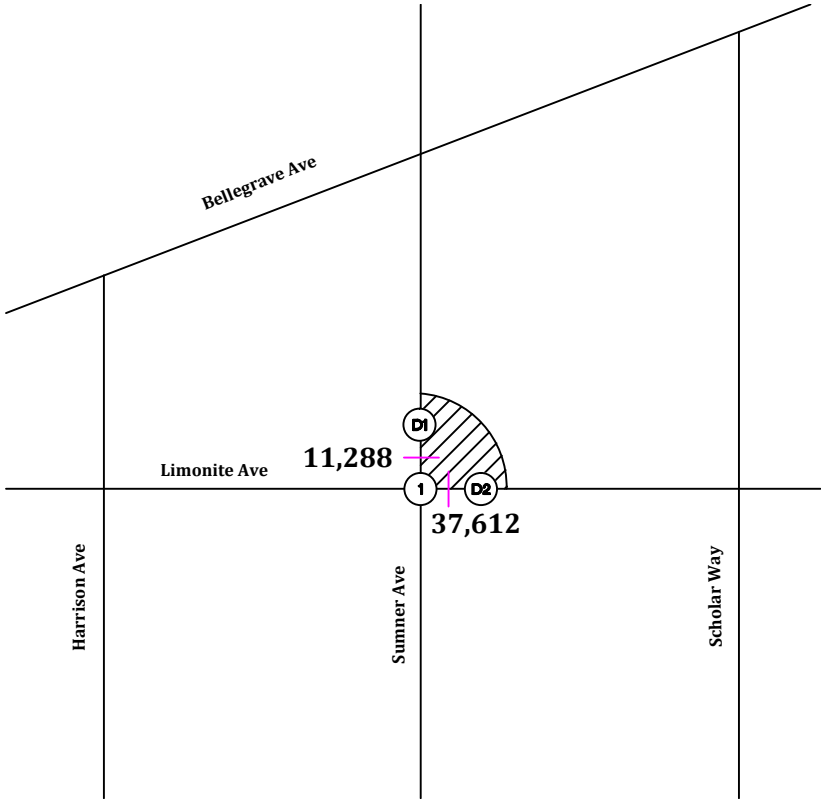
The project proposes to take access via two driveways, one on Sumner Avenue and the other on Limonite Avenue.

- The full-movement driveway on Sumner Avenue will be located approximately 500 feet north of Limonite Avenue.
- The right-in/right-out/left-in driveway on Limonite Avenue will be located approximately 500 feet east of Sumner Avenue.

The following issues were analyzed and are addressed in the report:

- traffic signal warrants at project driveways,
- sight distance,
- queuing,
- pedestrian facilities, and
- bicycle facilities





NOT TO SCALE

LEGEND:

(X)	= Study Intersection
XX/YY	= AM/PM Peak Hour Turning Movement Volumes
X,XXX	= ADT

FIGURE 4
OPENING YEAR 2017 WITH PROJECT PEAK HOUR TRAFFIC VOLUMES

Kimley»Horn

TABLE 4
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2017 WITH PROJECT

Int. #	Intersection	Traffic Control	AM Peak Hour						PM Peak Hour					
			Without Project		With Project		Project Impact	Impact Sig?	Without Project		With Project		Project Impact	Impact Sig?
			Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
1	Limonite Avenue at Sumner Avenue	S	41.2	D	41.3	D	0.1	No	48.0	D	50.0	D	2.0	No
D1	Sumner Driveway	U	-	-	13.9	B	-	-	-	-	16.0	C	-	-
D2	Limonite Driveway	U	-	-	12.4	B	-	-	-	-	16.1	C	-	-

Notes:
Bold and shaded values indicate intersections operating at LOS E or F or significant impact to intersection per City standards.
At a signalized intersection, delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the average vehicle delay on the worst movement.
Delay values are based on the methodology outlined in the 2010 Highway Capacity Manual.

TABLE 5
SUMMARY OF ROADWAY SEGMENT ANALYSIS
OPENING YEAR 2017 WITH PROJECT CONDITIONS

Roadway	Segment	Opening Year Without Project				Opening Year With Project				Project Impact / Significance	
		LOS **E** Capacity	Traffic Volume	V/C	LOS	Project Traffic	Traffic Volume	V/C	LOS	Project Impact	Significant?
Limonite Avenue	East of Sumner Avenue	53,000	36,820	0.695	B	792	37,612	0.710	C	0.015	No
Sumner Avenue	North of Limonite Avenue	18,000	9,928	0.552	A	1,360	11,288	0.627	B	0.076	No

Notes: V/C = Volume-to-Capacity ratio, LOS = Level of Service
Bold V/C and LOS values indicate a deficient Level of Service, based on City of Eastvale General Plan Policy

Traffic Signal Warrant Analysis

A traffic signal warrant analysis was conducted for each of the project driveways. The warrants were conducted using the California Manual on Uniform Traffic Control Devices (MUTCD) Warrant based on estimated Average Daily Traffic (ADT) and Warrant 3 (Peak Hour Warrant) to determine whether either driveway would warrant a traffic signal. Traffic signal warrant worksheets are provided in *Appendix C*.

The chart below shows the results of both Signal Warrant analyses.

Intersection	Satisfied?	
	Estimated ADT	Warrant **3**
Sumner Avenue at Driveway 1	No	No
Limonite Avenue at Driveway 2	No	No

Sight Distance

The site driveways and project improvements will be designed so that adequate sight distance for drivers entering and exiting the site is maintained. The line of sight – a straight line between the driver's eye and oncoming vehicles on the adjacent roadway defines the Limited Use Area. The Limited Use Area for each driveway will be kept clear of visual obstructions, including project signs, building structures, and landscaping in order to maintain adequate sight distance.

The sight distance analysis for the commercial center project was conducted through field observations. Field observations revealed that both Sumner Avenue and Limonite Avenue are straight and flat streets, which is conducive to good sight distance conditions, and adequate sight distance is provided in each direction.

Queuing

An eastbound left-turn pocket is proposed for the Limonite driveway. The site plan indicates the pocket would be approximately 75 feet long. The pocket would accommodate a queue of 1 to 3 vehicles, assuming an average of 25 feet per vehicle.

A queuing analysis was performed to ensure that sufficient space will be provided for an eastbound left-turn pocket along Limonite Avenue at the project driveway. The queuing analysis shows that the 95th percentile queue for both peak hour conditions will be one vehicle. The eastbound left-turn pocket shown on the site plan will be sufficient for storage for 95th percentile queue lengths.

Pedestrian Facilities

Currently, there are sidewalks along both Limonite Avenue and Sumner Avenue that promote pedestrian mobility to the project site. Also, the project will provide two pedestrian connections on Valencia Street that will allow residents from the neighboring community to access the project site on foot.

Bicycle Facilities

Currently, Sumner Avenue has Class II bicycle lanes on both sides of the roadway along the project frontage. Limonite Avenue does not have bicycle lanes along the project frontage.

SUMMARY

- The proposed project is an approximately 71,000-square-foot commercial center.
- The project was evaluated for typical weekday operations at the intersection of Limonite Avenue at Sumner Avenue.
- Under Existing Conditions, the intersection of Limonite Avenue at Sumner Avenue would operates at LOS D or better during both peak hours.
- The project is estimated to generate approximately 2,945 new vehicle trips on a daily basis, with 68 trips in the morning peak hour and 174 trips in the evening peak hour.
- Under Opening Year 2017 With Project Conditions, the intersection of Limonite Avenue at Sumner Avenue would operate at a LOS D or better during both peak hours.
- The project proposes to take access via one full-movement driveways on Sumner Avenue and a right-in/right-out/left-in driveway on Limonite Avenue.
- A signal warrant analysis indicates that a traffic signal would be not warranted for either of the project driveways.
- Each site driveway and the project improvements (project signage, building structures, and landscaping) will be designed so that adequate sight distance for drivers entering and exiting the site is maintained. Both Sumner Avenue and Limonite Avenue are straight and flat streets, which is conducive to good sight distance conditions, and adequate sight distance is provided in each direction.
- The queuing analysis at the Limonite driveway shows that the 95th percentile queue for the eastbound left-turn pocket for both peak hour conditions will be one vehicle. The eastbound left-turn pocket shown on the site plan will be sufficient for storage for 95th percentile queue lengths.

APPENDIX A

TRAFFIC DATA COLLECTION WORKSHEETS

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6091-001

Day: Thursday

City: Eastvale

Date: 5/28/2015

AM

NS/EW Streets:	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	2	3	0	2	3	1	
7:00 AM	12	44	46	12	38	26	18	102	4	22	137	7	468
7:15 AM	13	44	42	19	52	26	20	120	3	16	156	5	516
7:30 AM	28	51	50	18	22	21	33	144	5	20	147	7	546
7:45 AM	16	49	61	20	13	18	30	126	4	25	115	2	479
8:00 AM	23	40	34	38	23	16	24	110	5	30	124	2	469
8:15 AM	17	29	51	26	13	9	20	108	2	26	121	8	430
8:30 AM	14	30	39	27	15	16	15	118	4	25	119	7	429
8:45 AM	6	19	32	13	15	18	12	124	6	26	113	8	392
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	129	306	355	173	191	150	172	952	33	190	1032	46	3729
APPROACH %'s :	16.33%	38.73%	44.94%	33.66%	37.16%	29.18%	14.87%	82.28%	2.85%	14.98%	81.39%	3.63%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	80	184	187	95	110	81	107	500	17	91	542	16	2010
PEAK HR FACTOR :		0.874			0.737			0.857			0.917		0.920

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-6091-001

Day: Thursday

City: Eastvale

Date: 5/28/2015

PM

NS/EW Streets:	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	2	3	0	2	3	1	
4:00 PM	4	18	42	26	21	29	25	161	3	61	123	9	522
4:15 PM	11	22	47	17	38	14	26	168	4	44	130	14	535
4:30 PM	12	35	33	15	38	33	19	153	6	44	139	7	534
4:45 PM	10	24	36	17	33	24	20	170	8	39	142	12	535
5:00 PM	7	21	27	21	40	27	22	173	10	53	138	8	547
5:15 PM	7	12	37	22	39	28	29	186	6	50	141	11	568
5:30 PM	12	16	52	17	42	33	23	167	9	55	166	11	603
5:45 PM	4	18	42	22	52	31	20	139	8	62	147	12	557
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	67	166	316	157	303	219	184	1317	54	408	1126	84	4401
APPROACH %'s :	12.20%	30.24%	57.56%	23.12%	44.62%	32.25%	11.83%	84.69%	3.47%	25.22%	69.59%	5.19%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	30	67	158	82	173	119	94	665	33	220	592	42	2275
PEAK HR FACTOR :		0.797			0.890			0.896			0.920		0.943

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Sumner Ave and Limonite Ave , Eastvale

Date: 5/28/2015

Day: Thursday

Project #: 15-6091-001

City: Eastvale

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Peak Hour Summary

Southbound Approach

Sumner Ave

Lanes	0	2	1		
AM	81	110	95	307	AM
NOON	0	0	0	0	NOON
PM	119	173	82	203	PM

Eastbound Approach

Limonite Ave

Lanes	AM	NOON	PM
	703	0	741
2	107	0	94
3	500	0	665
0	17	0	33
Lanes	AM	NOON	PM

Westbound Approach

AM	NOON	PM	Lanes
16	0	42	1
542	0	592	3
91	0	220	2
782	0	905	
AM	NOON	PM	

CONTROL

Signalized

Northbound Approach

AM	218	80	184	187	AM
NOON	0	0	0	0	NOON
PM	426	30	67	158	PM
		1	2	0	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg		
286	307	AM
0	0	NOON
374	203	PM

West Leg			East Leg		
AM	NOON	PM			
703	0	741	649	0	854
624	0	792	782	0	905
			AM	NOON	PM

South Leg		
218	451	AM
0	0	NOON
426	255	PM

Total Volume Per Leg

North Leg	
593	AM
0	NOON
577	PM

West Leg			East Leg		
AM	NOON	PM			
1327	0	1533	1431	0	1759
			AM	NOON	PM

South Leg	
669	AM
0	NOON
681	PM

Prepared by NDS/ATD

VOLUME

Limonite Ave E/O Sumner Ave

Day: Thursday
Date: 5/28/2015

City: Eastvale
Project #: CA15_6092_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,015	12,949	25,964

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			19		29		48		12:00			206		175		381	
00:15			12		53		65		12:15			192		190		382	
00:30			12		26		38		12:30			211		178		389	
00:45			14	57	31	139	45	196	12:45			215	824	191	734	406	1558
01:00			10		31		41		13:00			208		176		384	
01:15			13		20		33		13:15			180		193		373	
01:30			15		16		31		13:30			176		177		353	
01:45			11	49	12	79	23	128	13:45			184	748	177	723	361	1471
02:00			12		14		26		14:00			204		190		394	
02:15			8		22		30		14:15			195		183		378	
02:30			16		15		31		14:30			263		206		469	
02:45			14	50	13	64	27	114	14:45			276	938	206	785	482	1723
03:00			7		13		20		15:00			272		190		462	
03:15			14		18		32		15:15			239		186		425	
03:30			28		21		49		15:30			247		203		450	
03:45			20	69	12	64	32	133	15:45			227	985	180	759	407	1744
04:00			11		18		29		16:00			236		195		431	
04:15			19		26		45		16:15			231		193		424	
04:30			39		45		84		16:30			211		202		413	
04:45			31	100	79	168	110	268	16:45			215	893	194	784	409	1677
05:00			48		113		161		17:00			229		186		415	
05:15			64		125		189		17:15			242		204		446	
05:30			73		165		238		17:30			242		218		460	
05:45			76	261	137	540	213	801	17:45			219	932	233	841	452	1773
06:00			107		150		257		18:00			246		210		456	
06:15			121		165		286		18:15			247		209		456	
06:30			124		191		315		18:30			215		212		427	
06:45			162	514	161	667	323	1181	18:45			208	916	217	848	425	1764
07:00			143		162		305		19:00			210		208		418	
07:15			202		158		360		19:15			197		188		385	
07:30			214		196		410		19:30			214		191		405	
07:45			213	772	147	663	360	1435	19:45			182	803	193	780	375	1583
08:00			179		155		334		20:00			150		213		363	
08:15			198		156		354		20:15			133		182		315	
08:30			179		144		323		20:30			154		184		338	
08:45			184	740	145	600	329	1340	20:45			115	552	184	763	299	1315
09:00			181		126		307		21:00			114		175		289	
09:15			173		127		300		21:15			107		187		294	
09:30			154		142		296		21:30			81		154		235	
09:45			138	646	140	535	278	1181	21:45			72	374	133	649	205	1023
10:00			173		122		295		22:00			77		116		193	
10:15			181		137		318		22:15			81		105		186	
10:30			171		144		315		22:30			48		74		122	
10:45			167	692	170	573	337	1265	22:45			36	242	57	352	93	594
11:00			189		160		349		23:00			36		65		101	
11:15			192		137		329		23:15			32		64		96	
11:30			172		160		332		23:30			33		54		87	
11:45			182	735	164	621	346	1356	23:45			22	123	35	218	57	341
TOTALS				4685		4713		9398	TOTALS				8330		8236		16566
SPLIT %				49.9%		50.1%		36.2%	SPLIT %				50.3%		49.7%		63.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,015	12,949	25,964

AM Peak Hour			07:15	11:45	11:45	PM Peak Hour			14:30	17:30	14:30
AM Pk Volume			808	707	1498	PM Pk Volume			1050	870	1838
Pk Hr Factor			0.944	0.930	0.963	Pk Hr Factor			0.951	0.933	0.953
7 - 9 Volume	0	0	1512	1263	2775	4 - 6 Volume	0	0	1825	1625	3450
7 - 9 Peak Hour			07:15	07:00	07:15	4 - 6 Peak Hour			17:00	17:00	17:00
7 - 9 Pk Volume	0	0	808	663	1464	4 - 6 PK Volume	0	0	932	841	1773
Pk Hr Factor	0.000	0.000	0.944	0.846	0.893	Pk Hr Factor	0.000	0.000	0.963	0.902	0.964

Prepared by NDS/ATD

VOLUME

Sumner Ave N/O Limonite Ave

Day: Thursday
Date: 5/28/2015

City: Eastvale
Project #: CA15_6092_001

DAILY TOTALS	NB	SB	EB	WB	Total
	2,934	3,691	0	0	6,625

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	4		5				9		12:00	32		42				74	
00:15	6		2				8		12:15	23		42				65	
00:30	2		6				8		12:30	24		43				67	
00:45	4	16	6	19			10	35	12:45	28	107	36	163			64	270
01:00	3		4				7		13:00	36		46				82	
01:15	3		4				7		13:15	37		38				75	
01:30	2		2				4		13:30	37		48				85	
01:45	3	11	3	13			6	24	13:45	30	140	54	186			84	326
02:00	2		1				3		14:00	33		62				95	
02:15	5		4				9		14:15	47		50				97	
02:30	3		4				7		14:30	52		70				122	
02:45	2	12	3	12			5	24	14:45	55	187	72	254			127	441
03:00	1		2				3		15:00	60		68				128	
03:15	3		5				8		15:15	84		72				156	
03:30	2		6				8		15:30	67		78				145	
03:45	2	8	8	21			10	29	15:45	70	281	71	289			141	570
04:00	0		6				6		16:00	59		69				128	
04:15	3		10				13		16:15	52		73				125	
04:30	5		16				21		16:30	59		89				148	
04:45	3	11	21	53			24	64	16:45	55	225	77	308			132	533
05:00	8		15				23		17:00	48		85				133	
05:15	9		19				28		17:15	56		90				146	
05:30	15		35				50		17:30	48		90				138	
05:45	22	54	29	98			51	152	17:45	53	205	105	370			158	575
06:00	16		30				46		18:00	54		61				115	
06:15	42		43				85		18:15	65		51				116	
06:30	41		47				88		18:30	54		50				104	
06:45	51	150	53	173			104	323	18:45	49	222	60	222			109	444
07:00	69		80				149		19:00	45		50				95	
07:15	67		91				158		19:15	42		54				96	
07:30	93		60				153		19:30	46		36				82	
07:45	82	311	53	284			135	595	19:45	43	176	47	187			90	363
08:00	72		73				145		20:00	34		53				87	
08:15	50		52				102		20:15	46		41				87	
08:30	47		55				102		20:30	28		39				67	
08:45	40	209	47	227			87	436	20:45	36	144	38	171			74	315
09:00	30		38				68		21:00	33		26				59	
09:15	20		37				57		21:15	19		35				54	
09:30	23		27				50		21:30	17		30				47	
09:45	23	96	20	122			43	218	21:45	19	88	32	123			51	211
10:00	38		35				73		22:00	20		16				36	
10:15	27		33				60		22:15	15		18				33	
10:30	21		43				64		22:30	9		15				24	
10:45	21	107	33	144			54	251	22:45	8	52	19	68			27	120
11:00	20		30				50		23:00	3		14				17	
11:15	31		52				83		23:15	7		12				19	
11:30	20		21				41		23:30	2		8				10	
11:45	37	108	42	145			79	253	23:45	2	14	5	39			7	53
TOTALS		1093		1311				2404	TOTALS		1841		2380				4221
SPLIT %		45.5%		54.5%				36.3%	SPLIT %		43.6%		56.4%				63.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	2,934	3,691	0	0	6,625

AM Peak Hour	07:15	06:45			07:00	PM Peak Hour	15:00	17:00			17:00
AM Pk Volume	314	284			595	PM Pk Volume	281	370			575
Pk Hr Factor	0.844	0.780			0.941	Pk Hr Factor	0.836	0.881			0.910
7 - 9 Volume	520	511	0	0	1031	4 - 6 Volume	430	678	0	0	1108
7 - 9 Peak Hour	07:15	07:00			07:00	4 - 6 Peak Hour	16:00	17:00			17:00
7 - 9 Pk Volume	314	284	0	0	595	4 - 6 Pk Volume	225	370	0	0	575
Pk Hr Factor	0.844	0.780	0.000	0.000	0.941	Pk Hr Factor	0.953	0.881	0.000	0.000	0.910

APPENDIX B

INTERSECTION ANALYSIS WORKSHEETS

Eastvale Evergreen

Vistro File: K:\...\Eastvale AM.vistro
Report File: K:\...\Ex AM.pdf

Scenario 1: Existing AM
6/8/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	NBL	0.437	39.1	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	39.1
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.437

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	80	184	187	95	110	81	107	500	17	91	542	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	184	187	95	110	81	107	500	17	91	542	16
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	50	51	26	30	22	29	136	5	25	147	4
Total Analysis Volume [veh/h]	87	200	203	103	120	88	116	543	18	99	589	17
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	18	45	0	13	38	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	61	61	9	62	62	7	18	18	7	17	17
g / C, Green / Cycle	0.07	0.56	0.56	0.08	0.57	0.57	0.06	0.16	0.16	0.06	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.05	0.12	0.14	0.06	0.06	0.07	0.04	0.12	0.12	0.03	0.13	0.01
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1451	3101	3192	1649	3101	4567	1425
c, Capacity [veh/h]	109	929	790	127	948	821	194	509	263	190	723	226
d1, Uniform Delay [s]	50.56	12.42	12.76	49.85	11.10	11.15	50.25	43.98	44.01	50.10	44.78	39.48
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.54	0.53	0.79	11.52	0.24	0.30	2.93	1.99	3.85	2.19	2.31	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.22	0.26	0.81	0.11	0.12	0.60	0.73	0.73	0.52	0.81	0.08
d, Delay for Lane Group [s/veh]	63.10	12.95	13.55	61.37	11.34	11.46	53.18	45.96	47.86	52.29	47.09	39.62
Lane Group LOS	E	B	B	E	B	B	D	D	D	D	D	D
Critical Lane Group	no	no	yes	yes	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	2.74	2.57	2.71	3.19	1.26	1.18	1.63	4.90	5.23	1.38	5.31	0.40
50th-Percentile Queue Length [ft]	68.40	64.26	67.73	79.70	31.57	29.51	40.81	122.61	130.76	34.46	132.64	10.05
95th-Percentile Queue Length [veh]	4.92	4.63	4.88	5.74	2.27	2.12	2.94	8.54	8.98	2.48	9.08	0.72
95th-Percentile Queue Length [ft]	123.11	115.66	121.91	143.47	56.82	53.11	73.46	213.41	224.53	62.02	227.08	18.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.10	12.95	13.55	61.37	11.36	11.46	53.18	46.57	47.86	52.29	47.09	39.62
Movement LOS	E	B	B	E	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	22.10			27.95			47.74			47.64		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.13											
Intersection LOS	D											
Intersection V/C	0.437											

Sequence

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

Eastvale Evergreen

Vistro File: K:\...\Eastvale PM.vistro
Report File: K:\...\Ex PM.pdf

Scenario 1: Existing PM
6/8/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	SBL	0.469	39.6	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.469

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	30	67	158	82	173	119	94	665	33	220	592	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	67	158	82	173	119	94	665	33	220	592	42
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	18	42	22	46	32	25	176	9	58	157	11
Total Analysis Volume [veh/h]	32	71	168	87	183	126	100	705	35	233	628	45
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	0	13	45	0	19	38	0	16	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	56	56	7	59	59	7	20	20	10	24	24
g / C, Green / Cycle	0.04	0.51	0.51	0.07	0.54	0.54	0.06	0.18	0.18	0.09	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.12	0.05	0.10	0.10	0.03	0.15	0.15	0.08	0.14	0.03
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1457	3101	3192	1636	3101	4567	1425
c, Capacity [veh/h]	65	857	728	108	902	784	191	581	298	290	978	305
d1, Uniform Delay [s]	51.69	13.74	14.92	50.59	12.99	13.06	50.11	43.49	43.52	48.90	39.41	35.10
k, delay calibration	0.11	0.50	0.50	0.14	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.66	0.19	0.74	16.40	0.43	0.53	2.23	3.37	6.48	5.14	0.71	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

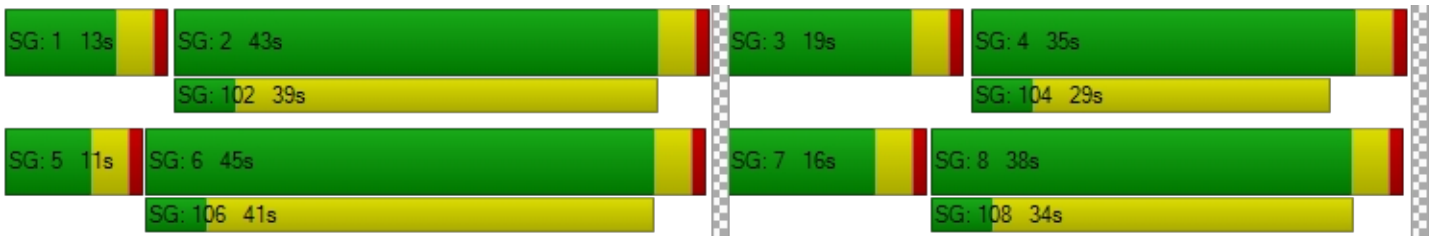
X, volume / capacity	0.49	0.08	0.23	0.80	0.18	0.19	0.52	0.84	0.84	0.80	0.64	0.15
d, Delay for Lane Group [s/veh]	57.35	13.93	15.65	66.99	13.42	13.59	52.34	46.86	50.01	54.04	40.12	35.32
Lane Group LOS	E	B	B	E	B	B	D	D	D	D	D	D
Critical Lane Group	no	no	yes	yes	no	no	no	no	yes	yes	no	no
50th-Percentile Queue Length [veh]	0.97	0.94	2.44	2.85	2.11	1.95	1.39	6.65	7.11	3.34	5.20	1.00
50th-Percentile Queue Length [ft]	24.15	23.43	61.03	71.28	52.83	48.77	34.82	166.34	177.81	83.39	129.89	25.03
95th-Percentile Queue Length [veh]	1.74	1.69	4.39	5.13	3.80	3.51	2.51	10.88	11.49	6.00	8.93	1.80
95th-Percentile Queue Length [ft]	43.47	42.17	109.85	128.31	95.10	87.78	62.68	272.10	287.15	150.10	223.35	45.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.35	13.93	15.65	66.99	13.44	13.59	52.34	47.83	50.01	54.04	40.12	35.32
Movement LOS	E	B	B	E	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	20.13			25.25			48.46			43.46		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.59											
Intersection LOS	D											
Intersection V/C	0.469											

Sequence

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



Eastvale Evergreen

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Report File: K:\...\OY AM.pdf

Scenario 3: Opening Year AM
6/8/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	SBL	0.606	41.2	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	80	184	187	95	110	81	107	500	17	91	542	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	34	18	0	60	49	34	28	368	28	0	359	24
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	206	191	157	161	117	137	878	45	93	912	40
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	56	52	43	44	32	37	239	12	25	248	11
Total Analysis Volume [veh/h]	126	224	208	171	175	127	149	954	49	101	991	43
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	18	45	0	11	38	0	11	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	46	46	14	49	49	7	28	28	7	27	27
g / C, Green / Cycle	0.09	0.42	0.42	0.12	0.45	0.45	0.06	0.25	0.25	0.06	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.15	0.11	0.09	0.10	0.05	0.21	0.21	0.03	0.22	0.03
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1449	3101	3192	1635	3101	4567	1425
c, Capacity [veh/h]	153	699	594	198	747	646	202	802	411	193	1135	354
d1, Uniform Delay [s]	48.94	21.62	21.93	47.34	18.71	18.78	50.59	38.99	39.00	50.07	39.74	32.09
k, delay calibration	0.20	0.50	0.50	0.29	0.50	0.50	0.11	0.11	0.22	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.44	1.21	1.62	24.11	0.65	0.79	5.18	2.25	8.21	2.18	2.27	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.32	0.35	0.86	0.21	0.22	0.74	0.83	0.83	0.52	0.87	0.12
d, Delay for Lane Group [s/veh]	67.38	22.83	23.55	71.45	19.36	19.57	55.77	41.23	47.21	52.25	42.02	32.24
Lane Group LOS	E	C	C	E	B	B	E	D	D	D	D	C
Critical Lane Group	no	no	yes	yes	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	4.17	4.10	3.90	5.91	2.61	2.37	2.16	8.61	9.52	1.41	8.71	0.91
50th-Percentile Queue Length [ft]	104.34	102.38	97.60	147.73	65.19	59.17	53.98	215.37	237.93	35.15	217.72	22.63
95th-Percentile Queue Length [veh]	7.51	7.37	7.03	9.90	4.69	4.26	3.89	13.43	14.58	2.53	13.55	1.63
95th-Percentile Queue Length [ft]	187.82	184.28	175.69	247.40	117.35	106.50	97.16	335.71	364.42	63.28	338.71	40.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.38	22.83	23.55	71.45	19.38	19.57	55.77	43.06	47.21	52.25	42.02	32.24
Movement LOS	E	C	C	E	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	33.16			38.26			44.88			42.56		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.17											
Intersection LOS	D											
Intersection V/C	0.606											

Sequence

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

Eastvale Evergreen

Vistro File: K:\...\Eastvale PM.vistro
Report File: K:\...\OY PM.pdf

Scenario 3: Opening Year PM
6/8/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	WBL	0.639	48.0	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	48.0
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	30	67	158	82	173	119	94	665	33	220	592	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	38	58	0	49	35	38	38	473	38	0	443	75
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	126	161	133	211	159	134	1151	72	224	1047	118
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	33	43	35	56	42	36	305	19	59	278	31
Total Analysis Volume [veh/h]	73	134	171	141	224	169	142	1221	76	238	1110	125
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	43	0	21	47	0	14	44	0	12	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	48	48	12	54	54	7	35	35	8	36	36
g / C, Green / Cycle	0.06	0.40	0.40	0.10	0.45	0.45	0.06	0.30	0.30	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.12	0.09	0.12	0.13	0.05	0.27	0.27	0.08	0.24	0.09
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1443	3101	3192	1627	3101	4567	1425
c, Capacity [veh/h]	92	672	571	166	750	646	194	940	479	209	1367	427
d1, Uniform Delay [s]	55.88	23.42	24.48	52.87	20.94	21.02	55.30	40.88	40.88	55.99	38.92	32.30
k, delay calibration	0.11	0.50	0.50	0.15	0.50	0.50	0.11	0.11	0.32	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.27	0.67	1.34	15.33	0.92	1.11	5.29	3.98	17.63	75.52	1.21	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

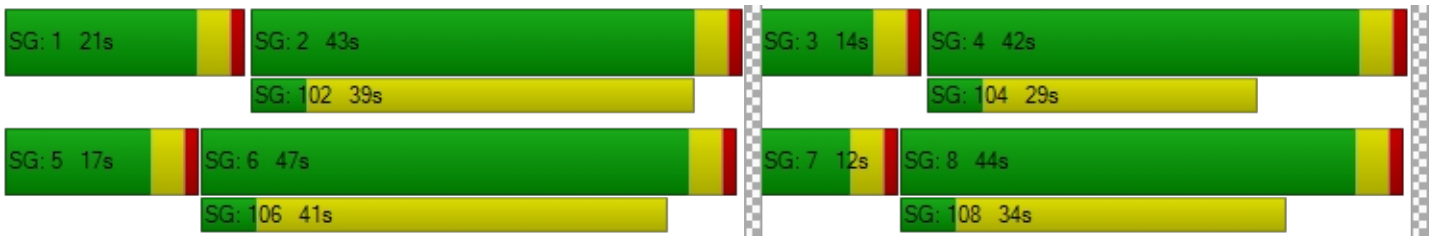
X, volume / capacity	0.80	0.20	0.30	0.85	0.28	0.29	0.73	0.91	0.91	1.14	0.81	0.29
d, Delay for Lane Group [s/veh]	70.15	24.08	25.82	68.20	21.86	22.13	60.59	44.86	58.51	131.51	40.13	32.67
Lane Group LOS	E	C	C	E	C	C	E	D	E	F	D	C
Critical Lane Group	no	no	yes	yes	no	no	no	no	yes	yes	no	no
50th-Percentile Queue Length [veh]	2.55	2.61	3.54	4.88	3.89	3.49	2.25	12.63	14.69	5.35	10.15	2.85
50th-Percentile Queue Length [ft]	63.70	65.37	88.39	122.06	97.28	87.27	56.36	315.85	367.34	133.75	253.70	71.16
95th-Percentile Queue Length [veh]	4.59	4.71	6.36	8.51	7.00	6.28	4.06	18.46	20.98	9.50	15.37	5.12
95th-Percentile Queue Length [ft]	114.66	117.66	159.10	212.66	175.11	157.09	101.45	461.59	524.50	237.61	384.31	128.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.15	24.08	25.82	68.20	21.88	22.13	60.59	48.90	58.51	131.51	40.13	32.67
Movement LOS	E	C	C	E	C	C	E	D	E	F	D	C
d_A, Approach Delay [s/veh]	33.77			34.19			50.56			54.27		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	48.04											
Intersection LOS	D											
Intersection V/C	0.639											

Sequence

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



Eastvale Evergreen

Vistro File: K:\...\Eastvale AM.vistro
Report File: K:\...\OY WP AM.pdf

Scenario 4: OY Cum With Proj AM
6/9/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	SBL	0.615	41.3	D
2	Driveway 1	Two-way stop	HCM2010	WBL	0.034	13.9	B
3	Driveway 2	Two-way stop	HCM2010	SBR	0.020	12.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	41.3
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	80	184	187	95	110	81	107	500	17	91	542	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	34	18	0	60	49	34	28	368	28	0	359	24
Site-Generated Trips [veh/h]	0	14	2	5	5	4	6	6	0	3	4	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	220	193	162	166	121	143	884	45	96	916	42
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	60	52	44	45	33	39	240	12	26	249	11
Total Analysis Volume [veh/h]	126	239	210	176	180	132	155	961	49	104	996	46
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	18	45	0	11	38	0	11	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	46	46	14	49	49	7	28	28	7	28	28
g / C, Green / Cycle	0.09	0.41	0.41	0.13	0.45	0.45	0.06	0.25	0.25	0.06	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.14	0.15	0.11	0.10	0.10	0.05	0.21	0.21	0.03	0.22	0.03
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1447	3101	3192	1635	3101	4567	1425
c, Capacity [veh/h]	153	692	588	203	745	644	202	805	412	194	1140	356
d1, Uniform Delay [s]	48.94	22.15	22.27	47.18	18.85	18.92	50.69	38.98	38.99	50.10	39.69	32.07
k, delay calibration	0.20	0.50	0.50	0.31	0.50	0.50	0.11	0.11	0.22	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.44	1.36	1.69	25.27	0.68	0.83	6.00	2.29	8.47	2.29	2.28	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.35	0.36	0.87	0.22	0.23	0.77	0.83	0.83	0.54	0.87	0.13
d, Delay for Lane Group [s/veh]	67.38	23.51	23.96	72.45	19.53	19.75	56.69	41.26	47.46	52.38	41.97	32.23
Lane Group LOS	E	C	C	E	B	B	E	D	D	D	D	C
Critical Lane Group	no	no	yes	yes	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	4.17	4.46	3.98	6.14	2.71	2.46	2.27	8.68	9.62	1.45	8.75	0.97
50th-Percentile Queue Length [ft]	104.34	111.48	99.60	153.47	67.87	61.42	56.69	217.08	240.38	36.26	218.78	24.22
95th-Percentile Queue Length [veh]	7.51	7.92	7.17	10.20	4.89	4.42	4.08	13.52	14.70	2.61	13.60	1.74
95th-Percentile Queue Length [ft]	187.82	198.05	179.28	255.05	122.17	110.55	102.04	337.89	367.51	65.26	340.07	43.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.38	23.51	23.96	72.45	19.55	19.75	56.69	43.16	47.46	52.38	41.97	32.23
Movement LOS	E	C	C	E	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	33.29			38.68			45.14			42.52		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.30											
Intersection LOS	D											
Intersection V/C	0.615											

Sequence

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

Intersection Level Of Service Report
#2: Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	Sumner Ave		Sumner Ave		Driveway 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Sumner Ave		Sumner Ave		Driveway 1	
Base Volume Input [veh/h]	307	0	0	286	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	76	0	0	137	0	0
Site-Generated Trips [veh/h]	0	21	4	0	14	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	21	4	429	14	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	5	1	107	4	1
Total Analysis Volume [veh/h]	389	21	4	429	14	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.15	0.00	13.94	9.80
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.70	0.35	0.12	0.12
95th-Percentile Queue Length [ft]	0.00	0.00	17.38	8.69	2.90	2.90
d_A, Approach Delay [s/veh]	0.00		0.08		13.21	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.30					
Intersection LOS	B					

Intersection Level Of Service Report
#3: Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Driveway 2		Limonite Ave		Limonite Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Driveway 2		Limonite Ave		Limonite Ave	
Base Volume Input [veh/h]	0	0	0	782	649	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	428	383	0
Site-Generated Trips [veh/h]	0	10	7	8	2	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	10	7	1234	1047	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	2	309	262	3
Total Analysis Volume [veh/h]	0	10	7	1234	1047	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	12.37	10.56	0.00	0.00	0.00
Movement LOS		B	B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.06	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	1.53	0.81	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.37		0.06		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.09					
Intersection LOS	B					

Eastvale Evergreen

Vistro File: K:\...\Eastvale AM.vistro
Report File: K:\...\OY WP PM.pdf

Scenario 4: OY Cum With Proj AM
6/8/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sumner Ave at Limonite Ave	Signalized	HCM2010	SBL	0.615	41.3	D
2	Driveway 1	Two-way stop	HCM2010	WBL	0.034	13.9	B
3	Driveway 2	Two-way stop	HCM2010	SBR	0.020	12.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Sumner Ave at Limonite Ave

Control Type:	Signalized	Delay (sec / veh):	41.3
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	2	0	0	2	0	1
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00	250.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Sumner Ave			Sumner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	80	184	187	95	110	81	107	500	17	91	542	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	34	18	0	60	49	34	28	368	28	0	359	24
Site-Generated Trips [veh/h]	0	14	2	5	5	4	6	6	0	3	4	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	220	193	162	166	121	143	884	45	96	916	42
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	60	52	44	45	33	39	240	12	26	249	11
Total Analysis Volume [veh/h]	126	239	210	176	180	132	155	961	49	104	996	46
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	18	45	0	11	38	0	11	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	36	0	0	29	0	0	24	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	46	46	14	49	49	7	28	28	7	28	28
g / C, Green / Cycle	0.09	0.41	0.41	0.13	0.45	0.45	0.06	0.25	0.25	0.06	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.14	0.15	0.11	0.10	0.10	0.05	0.21	0.21	0.03	0.22	0.03
s, saturation flow rate [veh/h]	1597	1676	1425	1597	1676	1447	3101	3192	1635	3101	4567	1425
c, Capacity [veh/h]	153	692	588	203	745	644	202	805	412	194	1140	356
d1, Uniform Delay [s]	48.94	22.15	22.27	47.18	18.85	18.92	50.69	38.98	38.99	50.10	39.69	32.07
k, delay calibration	0.20	0.50	0.50	0.31	0.50	0.50	0.11	0.11	0.22	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.44	1.36	1.69	25.27	0.68	0.83	6.00	2.29	8.47	2.29	2.28	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.35	0.36	0.87	0.22	0.23	0.77	0.83	0.83	0.54	0.87	0.13
d, Delay for Lane Group [s/veh]	67.38	23.51	23.96	72.45	19.53	19.75	56.69	41.26	47.46	52.38	41.97	32.23
Lane Group LOS	E	C	C	E	B	B	E	D	D	D	D	C
Critical Lane Group	no	no	yes	yes	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	4.17	4.46	3.98	6.14	2.71	2.46	2.27	8.68	9.62	1.45	8.75	0.97
50th-Percentile Queue Length [ft]	104.34	111.48	99.60	153.47	67.87	61.42	56.69	217.08	240.38	36.26	218.78	24.22
95th-Percentile Queue Length [veh]	7.51	7.92	7.17	10.20	4.89	4.42	4.08	13.52	14.70	2.61	13.60	1.74
95th-Percentile Queue Length [ft]	187.82	198.05	179.28	255.05	122.17	110.55	102.04	337.89	367.51	65.26	340.07	43.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.38	23.51	23.96	72.45	19.55	19.75	56.69	43.16	47.46	52.38	41.97	32.23
Movement LOS	E	C	C	E	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	33.29			38.68			45.14			42.52		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.30											
Intersection LOS	D											
Intersection V/C	0.615											

Sequence

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

Intersection Level Of Service Report
#2: Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	Sumner Ave		Sumner Ave		Driveway 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Sumner Ave		Sumner Ave		Driveway 1	
Base Volume Input [veh/h]	307	0	0	286	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	76	0	0	137	0	0
Site-Generated Trips [veh/h]	0	21	4	0	14	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	21	4	429	14	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	5	1	107	4	1
Total Analysis Volume [veh/h]	389	21	4	429	14	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.15	0.00	13.94	9.80
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.70	0.35	0.12	0.12
95th-Percentile Queue Length [ft]	0.00	0.00	17.38	8.69	2.90	2.90
d_A, Approach Delay [s/veh]	0.00		0.08		13.21	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.30					
Intersection LOS	B					

Intersection Level Of Service Report
#3: Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Driveway 2		Limonite Ave		Limonite Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Driveway 2		Limonite Ave		Limonite Ave	
Base Volume Input [veh/h]	0	0	0	782	649	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	428	383	0
Site-Generated Trips [veh/h]	0	10	7	8	2	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	10	7	1234	1047	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	2	309	262	3
Total Analysis Volume [veh/h]	0	10	7	1234	1047	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	12.37	10.56	0.00	0.00	0.00
Movement LOS		B	B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.06	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	1.53	0.81	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.37		0.06		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.09					
Intersection LOS	B					

APPENDIX C

SIGNAL WARRANT ANALYSIS WORKSHEETS

Figure 9-4
TRAFFIC SIGNAL WARRANTS
(Based on Estimated Average Daily Traffic - See Note)

Major Street: Limonite Avenue **Minor Street:** Driveway 2
City: Eastvale, CA **Analyst:** TB **Date:** 4-Jun-15

URBAN [X] RURAL [ ]

1. Minimum Vehicular

Satisfied [ ] Not Satisfied [X]

Number of lanes for moving traffic on each approach

Major Street		Minor Street	
1		1	
2 or more	27464	1	711
2 or more		2 or more	
1		2 or more	

Minimum Requirements EADT

Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor street approach (one direction only)	
Urban	Rural	**Urban**	Rural
8,000	5,600	2,400	1,680
9,600	6,720	2,400	1,680
9,600	6,720	3,200	2,240
8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied [ ] Not Satisfied [X]

Number of lanes for moving traffic on each approach

Major Street		Minor Street	
1		1	
2 or more	27464	1	711
2 or more		2 or more	
1		2 or more	

Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor street approach (one direction only)	
Urban	Rural	**Urban**	Rural
12,000	8,400	1,200	850
14,400	10,080	1,200	850
14,400	10,080	1,600	1,120
12,000	8,400	1,600	1,120

3. Combination

Satisfied [ ] Not Satisfied [X]

2 Warrants | 2 Warrants

No one warrant satisfied, but following warrants fulfilled 80% or more [ ] [ ]
1 2

NOTE: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Limonite Ave** EB WB # OF APPROACH LANES: **3**

MINOR STREET: **Driveway 2** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Eastvale, CA**

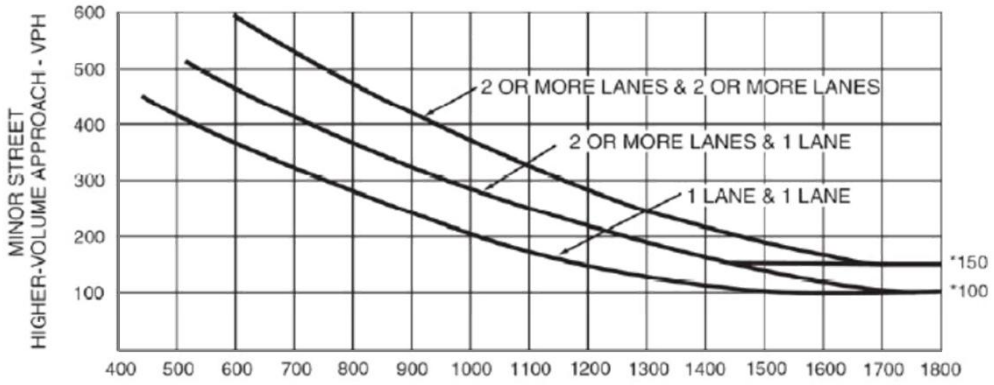
COMMENTS: Signal Warrant Study

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **Y**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→	**420**	**105**		**630**	**53**		**336**	**84**		**504**	**42**			
06:00 AM	TO	07:00 AM	1,181	0	Y			Y			Y			Y				
07:00 AM	TO	08:00 AM	1,435	13	Y			Y			Y			Y				
08:00 AM	TO	09:00 AM	1,340	13	Y			Y			Y			Y				
09:00 AM	TO	10:00 AM	1,181	0	Y			Y			Y			Y				
10:00 AM	TO	11:00 AM	1,265	0	Y			Y			Y			Y				
11:00 AM	TO	12:00 PM	1,356	0	Y			Y			Y			Y				
12:00 PM	TO	01:00 PM	1,558	0	Y			Y			Y			Y				
01:00 PM	TO	02:00 PM	1,471	0	Y			Y			Y			Y				
02:00 PM	TO	03:00 PM	1,723	0	Y			Y			Y			Y				
03:00 PM	TO	04:00 PM	1,744	0	Y			Y			Y			Y				
04:00 PM	TO	05:00 PM	1,677	43	Y			Y			Y			Y	Y	**Y**		
05:00 PM	TO	06:00 PM	1,773	43	Y			Y			Y			Y	Y	**Y**		
06:00 PM	TO	07:00 PM	1,764	0	Y			Y			Y			Y				
07:00 PM	TO	08:00 PM	1,583	0	Y			Y			Y			Y				
08:00 PM	TO	09:00 PM	1,315	0	Y			Y			Y			Y				
09:00 PM	TO	10:00 PM	1,023	0	Y			Y			Y			Y				
			23,389	112	16	0	**0**	16	0	**0**	16	0	**0**	16	2	**2**	**0**	**0**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

06/04/15
Kimley-Horn and Associates

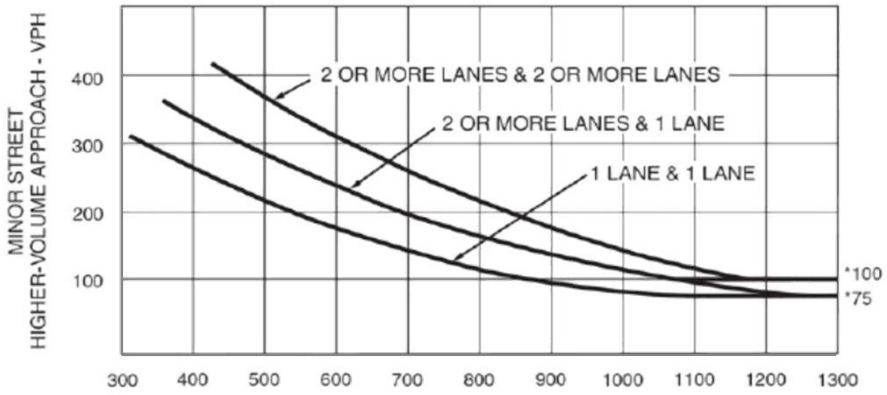
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 9-4
TRAFFIC SIGNAL WARRANTS
(Based on Estimated Average Daily Traffic - See Note)

Major Street: Sumner Avenue **Minor Street:** Driveway 1
City: Eastvale, CA **Analyst:** TB **Date:** 4-Jun-15

URBAN [X] RURAL [ ]

1. Minimum Vehicular

Satisfied [ ] Not Satisfied [X]

Number of lanes for moving traffic on each approach

Major Street		Minor Street	
1		1	
2 or more	8263	1	761
2 or more		2 or more	
1		2 or more	

Minimum Requirements EADT

Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor street approach (one direction only)	
Urban	Rural	**Urban**	Rural
8,000	5,600	2,400	1,680
9,600	6,720	2,400	1,680
9,600	6,720	3,200	2,240
8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied [ ] Not Satisfied [X]

Number of lanes for moving traffic on each approach

Major Street		Minor Street	
1		1	
2 or more	8263	1	761
2 or more		2 or more	
1		2 or more	

Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor street approach (one direction only)	
Urban	Rural	**Urban**	Rural
12,000	8,400	1,200	850
14,400	10,080	1,200	850
14,400	10,080	1,600	1,120
12,000	8,400	1,600	1,120

3. Combination

Satisfied [ ] Not Satisfied [X]

2 Warrants | 2 Warrants

No one warrant satisfied, but following warrants fulfilled 80% or more [ ] [ ]
1 2

NOTE: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Sumner Avenue** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Driveway 1** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Eastvale, CA**

COMMENTS: Signal Warrant Study

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**

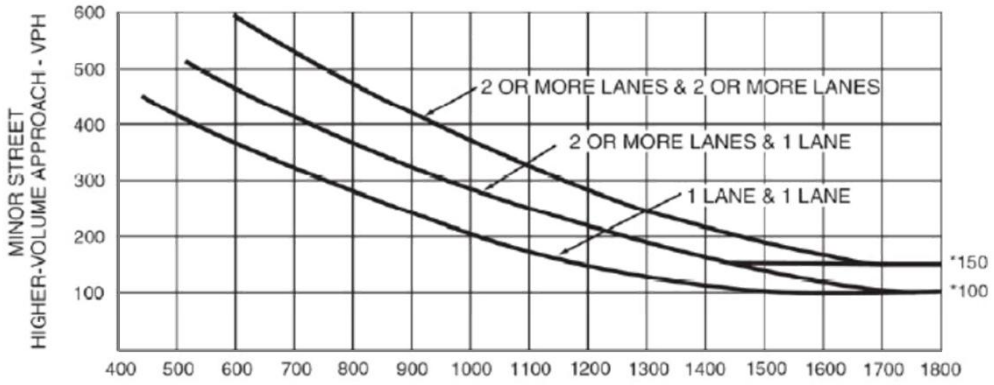
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **Y**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→	**420**	**105**		**630**	**53**		**336**	**84**		**504**	**42**			
06:00 AM	TO	07:00 AM	323	0														
07:00 AM	TO	08:00 AM	595	14	Y						Y			Y				
08:00 AM	TO	09:00 AM	436	14	Y						Y							
09:00 AM	TO	10:00 AM	218	0														
10:00 AM	TO	11:00 AM	251	0														
11:00 AM	TO	12:00 PM	253	0														
12:00 PM	TO	01:00 PM	270	0														
01:00 PM	TO	02:00 PM	326	0														
02:00 PM	TO	03:00 PM	441	0	Y						Y							
03:00 PM	TO	04:00 PM	570	0	Y						Y			Y				
04:00 PM	TO	05:00 PM	533	46	Y						Y			Y	Y	**Y**		
05:00 PM	TO	06:00 PM	575	46	Y						Y			Y	Y	**Y**		
06:00 PM	TO	07:00 PM	444	0	Y						Y							
07:00 PM	TO	08:00 PM	363	0							Y							
08:00 PM	TO	09:00 PM	315	0														
09:00 PM	TO	10:00 PM	211	0														
			6,124	120	7	0	**0**	0	0	**0**	8	0	**0**	4	2	**2**	**0**	**0**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

06/04/15

Kimley-Horn and Associates

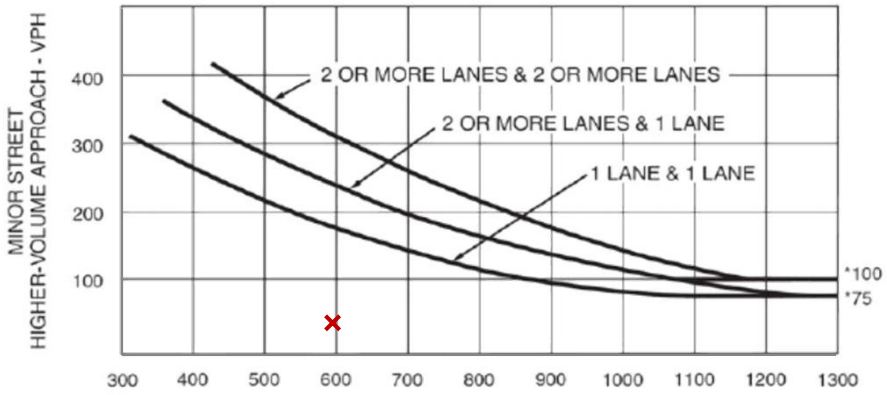
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.