HEXAGON TRANSPORTATION CONSULTANTS, INC.

Big Wave North Parcel Alternative

Drafted Transportation Impact Analysis

Prepared for:

County of San Mateo

August 28, 2014

Hexagon Office: 111 W. St. John Street, Suite 850
San Jose, California

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Executive Summary

This report presents the results of the traffic study for the proposed Big Wave Project that would be located on Airport Street, north of the Princeton/Pillar Point Harbor area in unincorporated San Mateo County, CA. The 19.53-acre project site is currently vacant. The proposed project includes a 70,500 square-foot Wellness Center and five commercial buildings totaling 161,263 square feet. The proposed project includes the following components:

Wellness Center

- Housing for developmentally disabled adults and their aides: including 57 bedrooms to provide affordable housing for a maximum of 50 developmentally disabled adults and 20 staff persons.
- Gym and basketball court
- 27,500 s.f. of storage space

Office Park

- The proposed office/industrial park includes 161,263 square feet (s.f.) in five buildings. For purposes of the traffic study, based on parking constraints, the office/industrial park was assumed to include 64,505 s.f. of office use, 40,316 s.f. of research and development (R&D) use, 32,253 s.f. of light manufacturing use, and 24,189 s.f. of storage space.

South Parcel

- The project also includes free public parking for beach access and a gated boat storage yard, in which boat owners can rent storage space. The boat storage yard is intended to raise additional revenue for operations of the Wellness Center.

Access to the project site would be provided by driveways along Airport Street.

Project Trip Estimates

Trip generation estimates were based on rates obtained from the Institute of Transportation Engineers (ITE) published Trip Generation Manual, *Ninth Edition*, 2012. The General Office (ITE category 710) rates were applied to the proposed office use; the Research and Development (ITE category 760) rates were applied to the proposed R&D use, the ITE Manufacturing (ITE land use code 140) rates were applied to the proposed Light Manufacturing portion, and the ITE Warehousing (ITE category 150) rates were applied to the storage space because these rates best represent the project description. The 57 bedrooms for developmentally disabled adults would not generate any trips as the residents would not drive. The residents would have staff/care-givers residing on the project site who would drive them to and from activities, appointments, errands, etc. The residential units for the 20 staff/care-givers were treated as 20 apartments(Apartment, ITE category 220). In reality the trips probably would be less because the staff will live and work on site. Application of ITE standard trip generation rates to the proposed development shows that the project is estimated to generate 1,479 daily trips, including 199 trips (163 inbound and 36 outbound) during the AM peak hour, and 192 trips (42 inbound and 150 outbound) during the PM peak hour (see Table ES-1).

Table ES 1
Project Trip Generation Estimates - Weekday

Land Use	ITE Code	Size		Daily Trip Rates	Daily Trips	AM Peak Hour Pk-Hr Rate	AM Peak Hour Trips In	AM Peak Hour Trips Out	AM Peak Hour Trips Total	PM Peak Hour Pk-Hr Rate	PM Peak Hour Trips In	PM Peak Hour Trips Out	PM Peak Hour Trips Total
Office Park													
Office Building[1]	710	64,505	s.f.	11.03	711	1.56	89	12	101	1.49	16	80	96
Research & Development[2]	760	40,316	s.f.	8.11	327	1.22	41	8	49	1.07	6	37	43
Storage[3]	150	24,189	s.f.	3.56	86	0.30	6	1	7	0.32	2	6	8
Light Manufactuing[4]	140	32,253	s.f.	3.82	123	0.73	18	6	24	0.73	8	16	24
Office Park Total		**161,263**			**1,248**		**154**	**27**	**181**		**32**	**139**	**171**
Wellness Center													
Storage[3]	150	27,500	s.f.	3.56	98	0.30	7	1	8	0.32	2	7	9
Apartments[5]	220	20	units	6.65	133	0.51	2	8	10	0.62	8	4	12
Wellness Center Total					**231**		**9**	**9**	**18**		**10**	**11**	**21**
Total Project Trips					**1,479**		**163**	**36**	**199**		**42**	**150**	**192**

Notes:
[1] Rate base on ITE Land Use Code 710 (General Office), average rates used.
[2] Rate base on ITE Land Use Code 760 (Research & Development), average rates used.
[3] Rate base on ITE Land Use Code 150 (Warehousing), average rates used.
[4] Rate base on ITE Land Use Code 140 (Manufacturing), average rates used.
[5] Rates base on ITE Land Use Code 220 (Apartment), average rates used.
Source: ITE Trip Generation, 9th Edition 2012.

Intersection Level of Service Impacts

Table ES-2 summarizes the results of the weekday peak hour intersection level of service analysis under the following conditions: existing (Chapter 2), existing plus project (Chapter 3), background (Chapter 4), background plus project (Chapter 5), and cumulative with project (Chapter 6) conditions. The results of the level of service calculations show that all of the study intersections, except for the intersection of Highway 1 and Cypress Avenue, would operate at level of service (LOS) C or better under existing, existing plus project, background, and background plus project conditions, which is in accordance with County of San Mateo LOS standards.

Under cumulative conditions, 8 of the 11 study intersections would operate at level of service (LOS) C or better. The intersection at Highway 1 and Cypress Avenue would operate at unacceptable LOS F during both AM and PM peak hours. The intersection at Highway 1 and Capistrano Road (N) would operate at an acceptable level of service during the AM peak hour and would operate at unacceptable LOS E during the PM peak hour. Highway 1 and Main Street would operate at an unacceptable LOS E during PM peak hour under both no project and with project conditions.

Table ES-3 summarizes the results of the Saturday midday peak hour intersection level of service analysis for the six intersections along state highways. The results of the level of service calculations show that most of the study intersections would operate at level of service (LOS) C or better under all conditions, which is in accordance with County of San Mateo LOS standards. At the intersection of Highway 1 and Capistrano Road (North), the eastbound left turn movement would operate at LOS E under existing and existing plus project conditions. The project would not add any trips to this movement. At the intersection of Highway 1 and Cypress Avenue, the eastbound to northbound left turn movement would operate at LOS F under project conditions. This constitutes a significant impact according to the San Mateo County LOS standards.

Recommended Improvements

At the intersection of Highway 1 and Cypress Avenue, two potential mitigation measures were tested:

Signalization of Intersection at Highway 1 and Cypress Avenue

Under project conditions, the peak hour signal warrant would be met at the intersection of Highway 1 at Cypress Avenue. With a traffic signal, the Highway 1/Cypress Avenue intersection would operate at LOS C during both the AM and PM peak hours under existing plus project, background, and background plus project conditions and would operate at LOS D under cumulative plus project conditions. Under signalized conditions, the existing roadway geometry would be adequate to handle the anticipated traffic demand.

Roundabout at the Intersection of Highway 1 and Cypress Avenue

Caltrans now considers roundabouts whenever evaluating potential intersection improvements. The roundabout analysis at the intersection of Highway 1 and Cypress Avenue shows that a one-lane roundabout would operate with acceptable delay and LOS during the AM and PM peak hour under background plus project conditions on weekdays. During the midday peak hour on Saturday, there would be a need for a by-pass lane for the southbound right-turn traffic in order for the intersection to operate at an acceptable level of service C under existing plus project conditions. Under cumulative plus project conditions, a one-lane roundabout would not work well to bring an acceptable delay and LOS at this intersection. A detailed study for a feasible roundabout design to accommodate the future traffic would be recommended. The roundabout analysis calculation sheets are included in Appendix D. Hexagon has not evaluated whether the intersection is large enough to accommodate a roundabout or whether additional right-of-way would be required.

The proposed mitigations at the intersection of Highway 1 and Cypress Avenue fall within Caltrans' right of way. Therefore, approval of the proposed mitigation measures would be required from Caltrans. The approved mitigation measures should be constructed by the applicant as part of the project before occupancy.

Site Access and Circulation

The site access and circulation review is based on the site plan dated 5/28/2014 by Macleod and Associates. The site access was evaluated in accordance with generally accepted traffic engineering standards. Access to the north parcel project site would be provided by two full access driveways and one inbound only driveway on Airport Street. Access to the south parcel project site, where the boat storage is located, would be provded by one full access driveway on Airport Street. The onsite circulation was reviewed in accordance with generally accepted traffic engineering standards. Generally, the proposed plan would provide adequate access and on-site circulation for cars and trucks.

Table ES 2
Intersection Level of Service Summary - Weekday

Study Number	Intersection	Peak Hour	Count Date	Existing				Existing + Project				Background				Background + Project				Cumulative				Cumulative + Project			
				Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS	Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS	Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS	Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS	Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS	Average Delay (sec.)	LOS	Worst Delay (sec.)	LOS
1	Prospect Way and Capistrano Rd	AM	05/07/14	7.5	A	9.4	A	7.8	A	9.7	A	7.5	A	9.4	A	7.8	A	9.8	A	5.9	A	9.4	A	6.6	A	9.7	B
	(Unsignalized)	PM	05/07/14	7.2	A	10.4	B	8.0	A	11.0	B	7.3	A	10.4	B	8.0	A	11.0	B	7.3	A	10.7	B	8.1	A	11.3	B
2	Broadway and Prospect Way	AM	05/07/14	8.4	A	10.2	B	9.0	A	10.6	B	8.5	A	10.2	B	9.0	A	10.7	B	8.7	A	10.5	A	9.3	A	11.0	B
	(Unsignalized)	PM	05/07/14	8.1	A	10.4	B	8.6	A	11.3	B	8.1	A	10.5	B	8.6	A	11.4	B	8.4	A	10.7	B	8.9	A	11.8	B
3	Airport St and Stanford Ave/Cornell Ave	AM	05/07/14	5.3	A	11.3	B	4.9	A	12.8	B	5.3	A	11.4	A	4.9	A	12.8	B	5.7	A	12.0	B	5.3	A	13.6	B
	(Unsignalized)	PM	05/07/14	6.0	A	10.7	B	5.4	A	12.2	B	5.9	A	10.8	B	5.3	A	12.2	B	6.4	A	11.0	B	5.8	A	12.5	B
4	Airport St and La Granada Ave	AM	05/07/14	7.3	A	9.4	A	5.7	A	10.1	B	7.2	A	9.4	A	5.7	A	10.1	B	7.0	A	9.7	A	5.8	A	10.4	B
	(Unsignalized)	PM	05/07/14	4.1	A	9.5	A	3.2	A	9.4	A	4.1	A	9.2	A	3.3	A	9.4	A	4.1	A	9.2	A	3.2	A	9.4	A
5	Airport St and Los Banos Ave	AM	05/07/14	2.3	A	9.1	A	1.4	A	9.6	A	2.2	A	9.1	A	1.4	A	9.6	A	1.9	A	9.3	A	1.3	A	9.8	A
	(Unsignalized)	PM	05/07/14	1.6	A	9.2	A	1.2	A	9.6	A	1.6	A	9.2	A	1.2	A	9.6	A	1.6	A	9.2	A	1.2	A	9.6	A
6	SR 1 and Cypress Ave	AM	05/07/14	3.3	A	**36.5**	**E**	5.0	A	**51.6**	**F**	3.6	A	**41.3**	**E**	5.6	A	**60.9**	**F**	35.4	C	**(1)**	**F**	**61.0**	**F**	**(1)**	**F**
	(Unsignalized)	PM	05/07/14	4.3	A	**78.8**	**F**	28.8	B	**(1)**	**F**	5.1	A	**96.1**	**F**	34.1	B	**(1)**	**F**	**(1)**	**F**	**(1)**	**F**	**(1)**	**F**	**(1)**	**F**
7	SR 1 and Capistrano Rd (N)	AM	05/07/14	0.2	A	17.8	C	0.2	A	17.8	C	0.2	A	18.5	C	0.2	A	18.5	C	0.2	B	34.4	D	0.2	A	34.4	D
	(Unsignalized)	PM	05/07/14	0.6	A	24.3	C	0.6	A	24.3	C	0.6	A	25.8	D	0.6	A	25.8	D	0.8	A	**46.7**	**E**	0.8	A	**46.7**	**E**
8	SR 1 and Capistrano Road (S)	AM	05/07/14	14.9	B	--	--	16.1	B	--	--	15.1	B	--	--	16.3	B	--	--	19.9	B	--	--	21.7	C	--	--
		PM	05/07/14	14.8	B	--	--	15.0	B	--	--	15.3	B	--	--	15.4	B	--	--	20.2	C	--	--	20.4	C	--	--
9	SR 1 and Main St	AM	05/07/14	30.7	C	--	--	31.0	C	--	--	31.5	C	--	--	31.9	C	--	--	39.7	D	--	--	42.4	D	--	--
		PM	05/07/14	32.5	C	--	--	32.9	C	--	--	33.3	C	--	--	33.9	C	--	--	**64.0**	**E**	--	--	**66.6**	**E**	--	--
10	SR 1 and SR 92 *	AM	04/01/13	24.5	C	--	--	24.8	C	--	--	25.9	C	--	--	26.2	C	--	--	31.4	C	--	--	31.9	C	--	--
		PM	04/01/13	23.5	C	--	--	23.6	C	--	--	25.6	C	--	--	25.8	C	--	--	49.8	D	--	--	49.9	D	--	--
11	Main St and SR 92 *	AM	04/01/13	22.6	C	--	--	22.6	C	--	--	23.2	C	--	--	23.3	C	--	--	23.1	C	--	--	23.2	C	--	--
		PM	04/01/13	19.7	B	--	--	19.9	B	--	--	19.9	B	--	--	20.1	C	--	--	28.7	C	--	--	29.2	C	--	--

Notes:

* Denotes CMP intersection
Bold indicates a substandard level of service.
Bold indicates a significant impact.
(1) indicates the delay cannot be calculated, V/C >1.0

Table ES 3
Intersection Level of Service Summary - Weekend

Study Number	Intersection	Peak Hour	Count Date	Existing Average Delay (sec.)	Existing Average LOS	Existing Worst Delay (sec.)	Existing Worst LOS	Existing Plus Project Average Delay (sec.)	Existing Plus Project Average LOS	Existing Plus Project Worst Delay (sec.)	Existing Plus Project Worst LOS
6	SR 1 and Cypress Ave *(Unsignalized)*	Midday	05/24/14	6.9	A	**137.2**	**F**	12.3	B	**(1)**	**F**
7	SR 1 and Capistrano Rd (N) *(Unsignalized)*	Midday	05/24/14	1.4	A	**38.9**	**E**	1.4	A	**38.9**	**E**
8	SR 1 and Capistrano Road (S)	Midday	05/24/14	18.6	B	--	--	18.8	B	--	--
9	SR 1 and Main St	Midday	05/24/14	32.8	C	--	--	33.2	C	--	--
10	SR 1 and SR 92 *	Midday	05/24/14	28.4	C	--	--	28.7	C	--	--
11	Main St and SR 92 *	Midday	05/24/14	22.6	C	--	--	22.8	C	--	--

Notes:
* Denotes CMP intersection
Bold indicates a substandard level of service.
(1) indicates the delay cannot be calculated, V/C >1.0

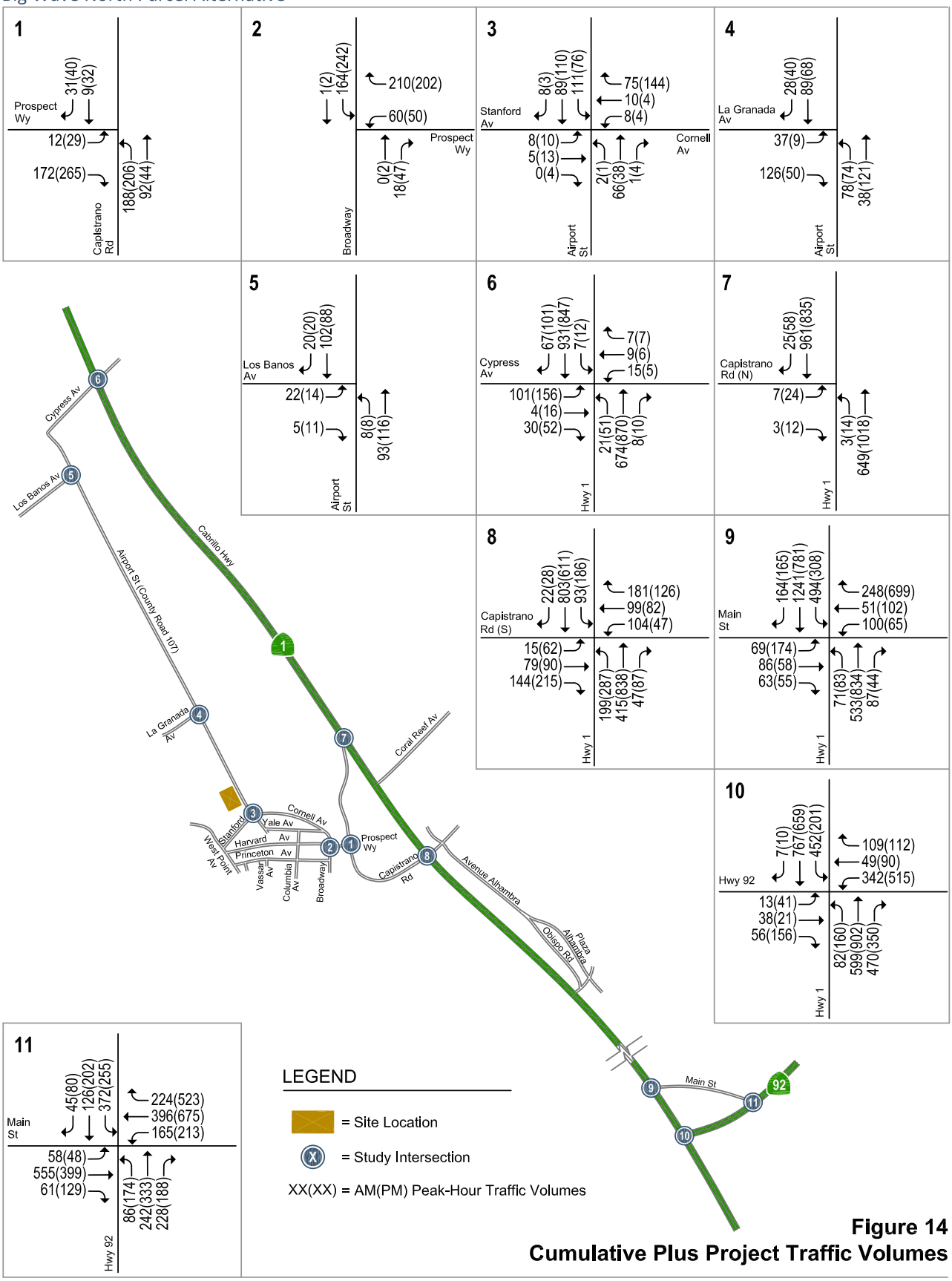


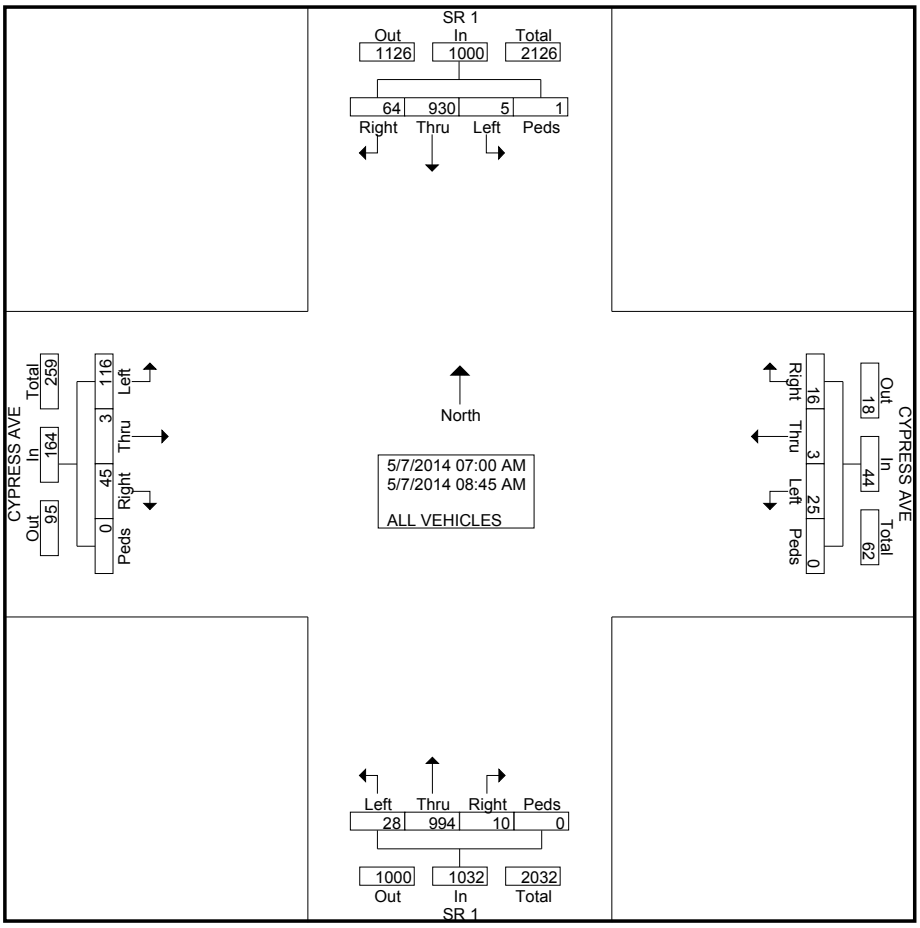
Figure 14
Cumulative Plus Project Traffic Volumes

All Traffic Data Services
2187 Kingsbury Cir
Santa Clara, CA, 95054
www.Alltrafficdata.net

File Name : #1 SR1&CYPRESSAM
Site Code : 1
Start Date : 5/7/2014
Page No : 1

Groups Printed- ALL VEHICLES

	SR 1 Southbound				CYPRESS AVE Westbound				SR 1 Northbound				CYPRESS AVE Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	3	110	0	0	2	0	4	0	0	134	5	0	4	1	15	0	278
07:15 AM	8	96	0	0	4	0	1	0	0	138	0	0	7	0	13	0	267
07:30 AM	8	100	0	0	1	0	1	0	1	125	2	0	12	0	13	0	263
07:45 AM	9	119	1	1	4	0	6	0	3	130	4	0	6	0	12	0	295
Total	28	425	1	1	11	0	12	0	4	527	11	0	29	1	53	0	1103
08:00 AM	4	117	2	0	0	0	4	0	1	123	2	0	2	0	13	0	268
08:15 AM	10	124	1	0	1	0	2	0	1	138	3	0	3	1	22	0	306
08:30 AM	13	138	0	0	2	1	3	0	1	98	6	0	8	0	17	0	287
08:45 AM	9	126	1	0	2	2	4	0	3	108	6	0	3	1	11	0	276
Total	36	505	4	0	5	3	13	0	6	467	17	0	16	2	63	0	1137
Grand Total	64	930	5	1	16	3	25	0	10	994	28	0	45	3	116	0	2240
Apprch %	6.4	93	0.5	0.1	36.4	6.8	56.8	0	1	96.3	2.7	0	27.4	1.8	70.7	0	
Total %	2.9	41.5	0.2	0	0.7	0.1	1.1	0	0.4	44.4	1.2	0	2	0.1	5.2	0	



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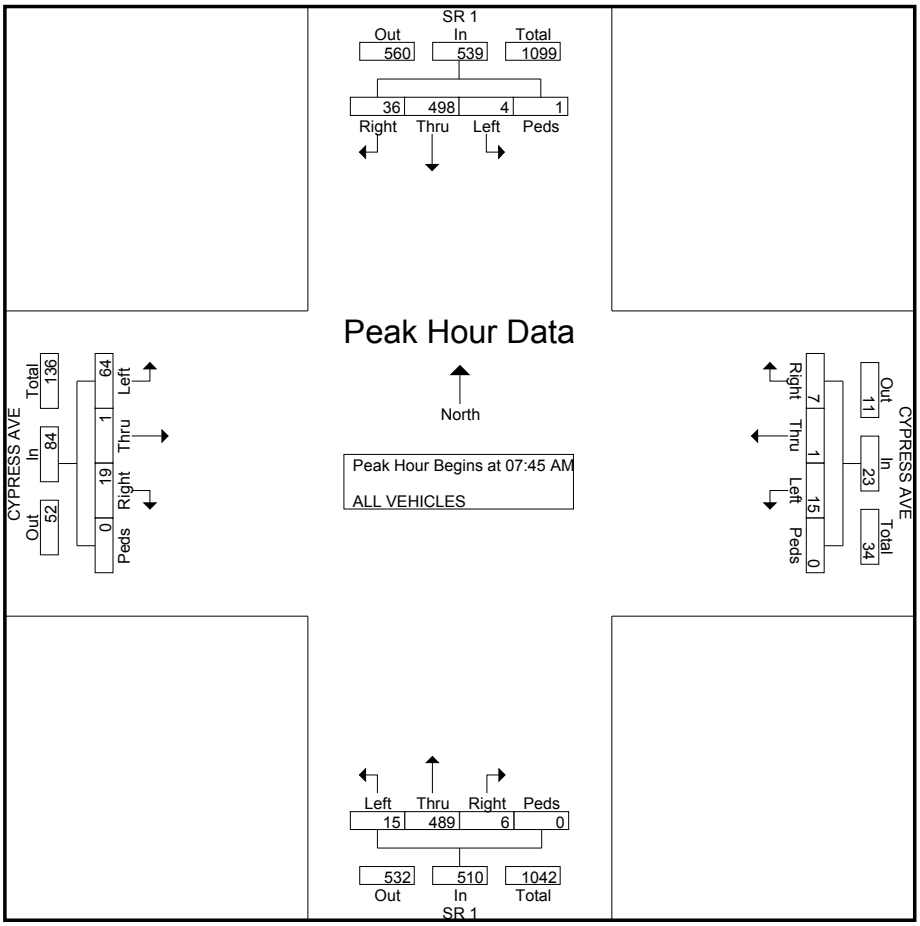
File Name : #1 SR1&CYPRESSAM
Site Code : 1
Start Date : 5/7/2014
Page No : 2

	SR 1 Southbound					CYPRESS AVE Westbound					SR 1 Northbound					CYPRESS AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	9	119	1	**1**	130	**4**	0	**6**	0	**10**	**3**	130	4	0	137	6	0	12	0	18	295
08:00 AM	4	117	**2**	0	123	0	0	4	0	4	1	123	2	0	126	2	0	13	0	15	268
08:15 AM	10	124	1	0	135	1	0	2	0	3	1	**138**	3	0	**142**	3	**1**	**22**	0	**26**	**306**
08:30 AM	**13**	**138**	0	0	**151**	2	**1**	3	0	6	1	98	**6**	0	105	**8**	0	17	0	25	287
Total Volume	36	498	4	1	539	7	1	15	0	23	6	489	15	0	510	19	1	64	0	84	1156
% App. Total	6.7	92.4	0.7	0.2		30.4	4.3	65.2	0		1.2	95.9	2.9	0		22.6	1.2	76.2	0		
PHF	.692	.902	.500	.250	.892	.438	.250	.625	.000	.575	.500	.886	.625	.000	.898	.594	.250	.727	.000	.808	.944



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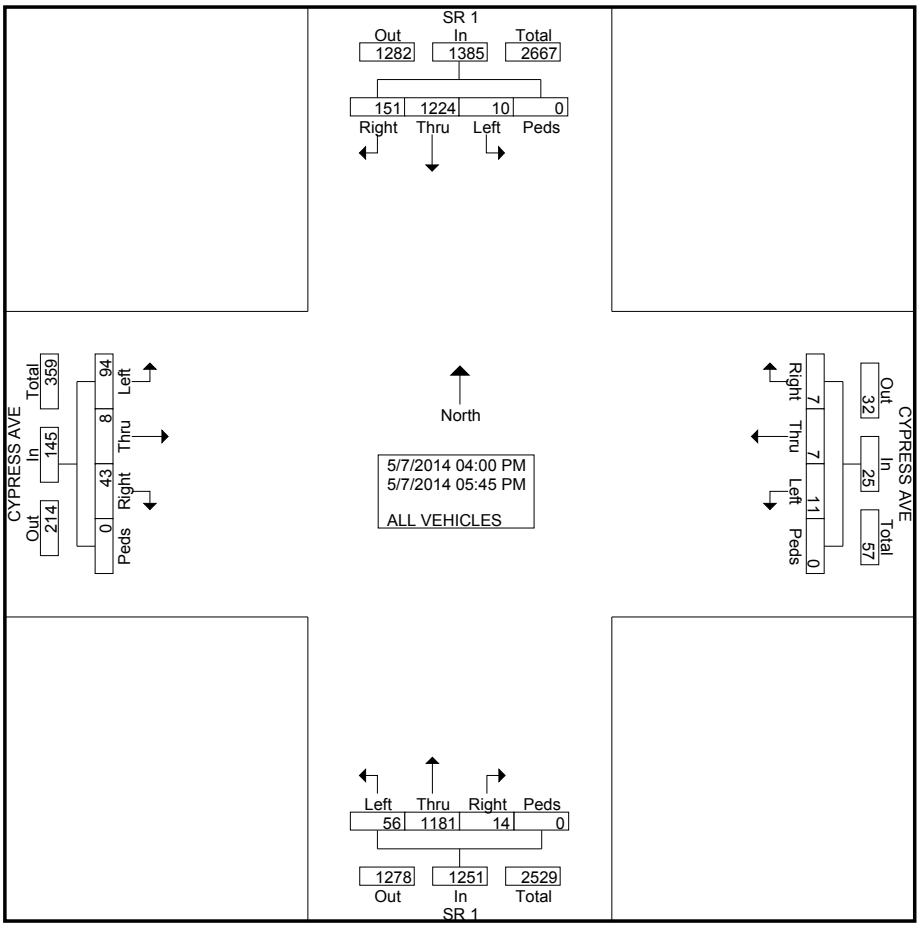
File Name : #1 SR1&CYPRESSPM
Site Code : 1
Start Date : 5/7/2014
Page No : 1

Groups Printed- ALL VEHICLES

	SR 1 Southbound				CYPRESS AVE Westbound				SR 1 Northbound				CYPRESS AVE Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	17	149	0	0	1	0	0	0	2	131	4	0	5	1	14	0	324
04:15 PM	16	162	0	0	0	1	1	0	2	139	5	0	9	0	8	0	343
04:30 PM	20	131	0	0	0	3	4	0	0	152	3	0	9	1	13	0	336
04:45 PM	23	158	3	0	1	2	1	0	3	154	10	0	1	1	7	0	364
Total	76	600	3	0	2	6	6	0	7	576	22	0	24	3	42	0	1367
05:00 PM	21	170	0	0	1	0	2	0	1	154	7	0	8	1	11	0	376
05:15 PM	12	162	2	0	0	1	1	0	1	158	8	0	4	2	16	0	367
05:30 PM	19	137	4	0	3	0	0	0	2	143	11	0	3	1	14	0	337
05:45 PM	23	155	1	0	1	0	2	0	3	150	8	0	4	1	11	0	359
Total	75	624	7	0	5	1	5	0	7	605	34	0	19	5	52	0	1439
Grand Total	151	1224	10	0	7	7	11	0	14	1181	56	0	43	8	94	0	2806
Apprch %	10.9	88.4	0.7	0	28	28	44	0	1.1	94.4	4.5	0	29.7	5.5	64.8	0	
Total %	5.4	43.6	0.4	0	0.2	0.2	0.4	0	0.5	42.1	2	0	1.5	0.3	3.3	0	



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2187 Kingsbury Cir
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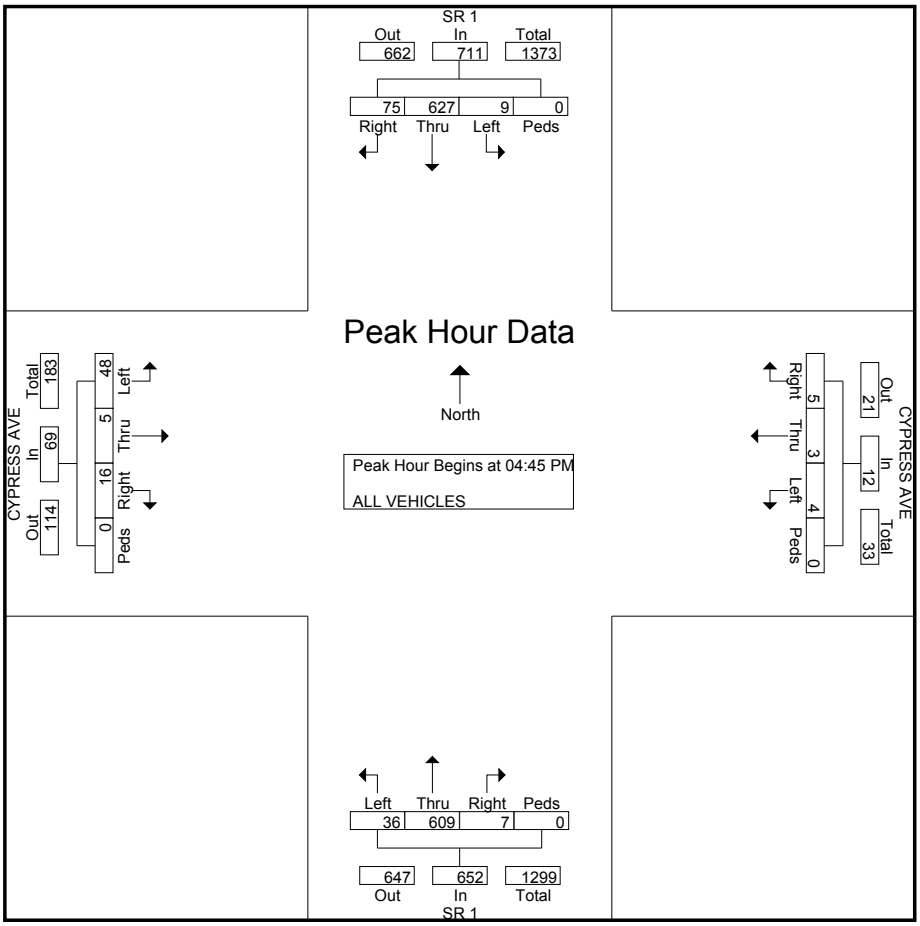
File Name : #1 SR1&CYPRESSPM
Site Code : 1
Start Date : 5/7/2014
Page No : 2

	SR 1 Southbound					CYPRESS AVE Westbound					SR 1 Northbound					CYPRESS AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**23**	158	3	0	184	1	**2**	1	0	**4**	**3**	154	10	0	**167**	1	1	7	0	9	364
05:00 PM	21	**170**	0	0	**191**	1	0	**2**	0	3	1	154	7	0	162	**8**	1	11	0	20	**376**
05:15 PM	12	162	2	0	176	0	1	1	0	2	1	**158**	8	0	167	4	**2**	**16**	0	**22**	367
05:30 PM	19	137	**4**	0	160	**3**	0	0	0	3	2	143	**11**	0	156	3	1	14	0	18	337
Total Volume	75	627	9	0	711	5	3	4	0	12	7	609	36	0	652	16	5	48	0	69	1444
% App. Total	10.5	88.2	1.3	0		41.7	25	33.3	0		1.1	93.4	5.5	0		23.2	7.2	69.6	0		
PHF	.815	.922	.563	.000	.931	.417	.375	.500	.000	.750	.583	.964	.818	.000	.976	.500	.625	.750	.000	.784	.960

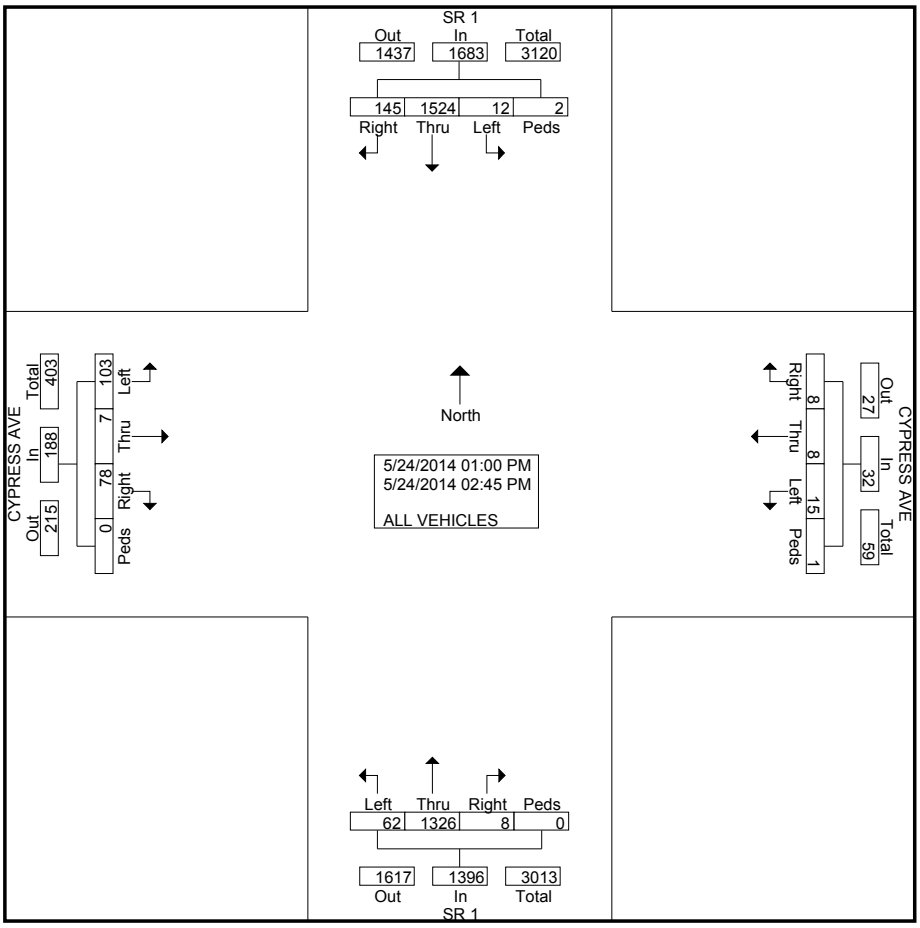


All Traffic Data Services
2187 Kingsbury Cir
Santa Clara, CA, 95054
www.Alltrafficdata.net

File Name : #1 SR1&CYPRESSWE
Site Code : 1
Start Date : 5/24/2014
Page No : 1

Groups Printed- ALL VEHICLES

	SR 1 Southbound				CYPRESS AVE Westbound				SR 1 Northbound				CYPRESS AVE Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
01:00 PM	21	228	0	0	2	1	3	0	2	197	9	0	9	1	7	0	480
01:15 PM	12	206	2	2	1	3	3	1	1	158	12	0	9	0	7	0	417
01:30 PM	14	219	1	0	1	1	1	0	0	178	12	0	7	3	12	0	449
01:45 PM	14	186	0	0	0	0	3	0	1	161	3	0	9	0	9	0	386
Total	61	839	3	2	4	5	10	1	4	694	36	0	34	4	35	0	1732
02:00 PM	24	166	2	0	1	0	1	0	0	159	10	0	11	1	22	0	397
02:15 PM	23	172	2	0	2	1	2	0	2	171	5	0	13	1	23	0	417
02:30 PM	16	164	3	0	0	1	1	0	0	167	9	0	14	0	11	0	386
02:45 PM	21	183	2	0	1	1	1	0	2	135	2	0	6	1	12	0	367
Total	84	685	9	0	4	3	5	0	4	632	26	0	44	3	68	0	1567
Grand Total	145	1524	12	2	8	8	15	1	8	1326	62	0	78	7	103	0	3299
Apprch %	8.6	90.6	0.7	0.1	25	25	46.9	3.1	0.6	95	4.4	0	41.5	3.7	54.8	0	
Total %	4.4	46.2	0.4	0.1	0.2	0.2	0.5	0	0.2	40.2	1.9	0	2.4	0.2	3.1	0	



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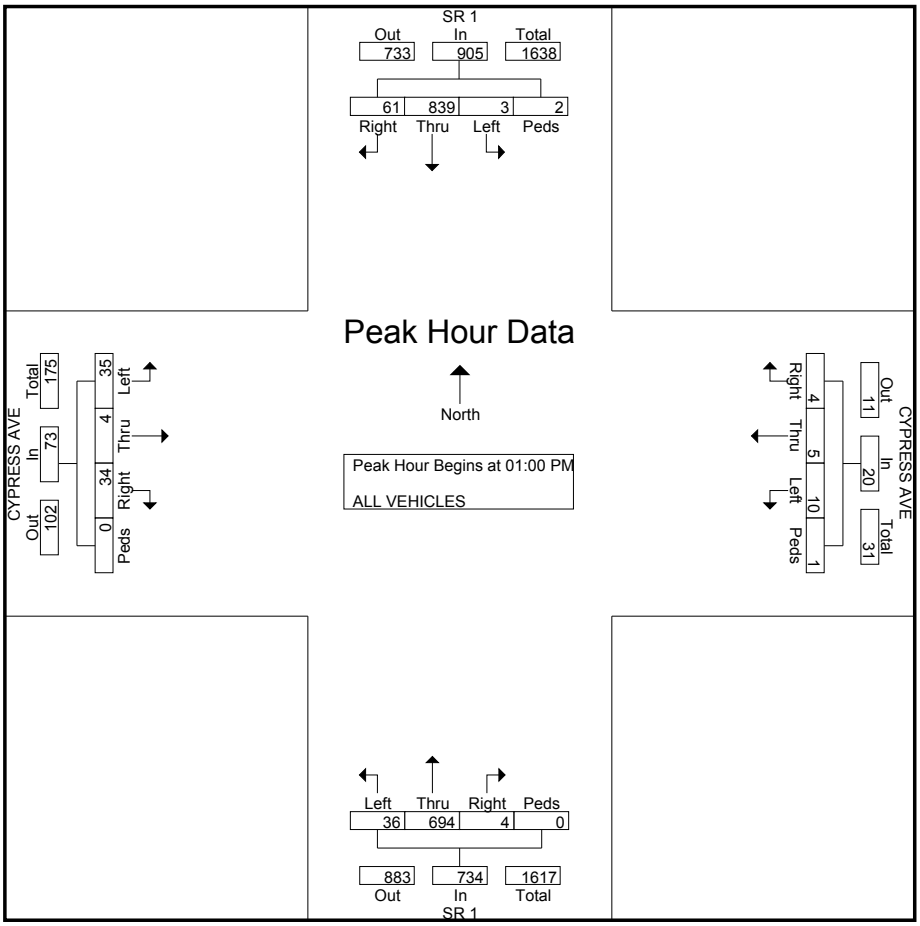
File Name : #1 SR1&CYPRESSWE
Site Code : 1
Start Date : 5/24/2014
Page No : 2

	SR 1 Southbound					CYPRESS AVE Westbound					SR 1 Northbound					CYPRESS AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	**21**	**228**	0	0	**249**	**2**	1	**3**	0	6	**2**	**197**	9	0	**208**	**9**	1	7	0	17	**480**
01:15 PM	12	206	**2**	**2**	222	1	**3**	3	**1**	**8**	1	158	**12**	0	171	9	0	7	0	16	417
01:30 PM	14	219	1	0	234	1	1	1	0	3	0	178	12	0	190	7	**3**	**12**	0	**22**	449
01:45 PM	14	186	0	0	200	0	0	3	0	3	1	161	3	0	165	9	0	9	0	18	386
Total Volume	61	839	3	2	905	4	5	10	1	20	4	694	36	0	734	34	4	35	0	73	1732
% App. Total	6.7	92.7	0.3	0.2		20	25	50	5		0.5	94.6	4.9	0		46.6	5.5	47.9	0		
PHF	.726	.920	.375	.250	.909	.500	.417	.833	.250	.625	.500	.881	.750	.000	.882	.944	.333	.729	.000	.830	.902



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	101	4	30	15	9	7	21	674	8	7	931	67
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)	110	4	33	16	10	8	23	733	9	8	1012	73
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	1854	1851	1048	1845	1883	737	1085			741		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1854	1851	1048	1845	1883	737	1085			741		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	94	88	65	86	98	96			99		
cM capacity (veh/h)	48	71	277	47	68	418	643			866		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	147	34	23	741	8	1085
Volume Left	110	16	23	0	8	0
Volume Right	33	8	0	9	0	73
cSH	59	66	643	1700	866	1700
Volume to Capacity	2.48	0.51	0.04	0.44	0.01	0.64
Queue Length 95th (ft)	367	52	3	0	1	0
Control Delay (s)	819.6	106.7	10.8	0.0	9.2	0.0
Lane LOS	F	F	B		A	
Approach Delay (s)	819.6	106.7	0.3		0.1	
Approach LOS	F	F				

Intersection Summary				
Average Delay	61.0			
Intersection Capacity Utilization	71.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	156	16	52	5	6	7	51	870	10	12	847	101
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)	170	17	57	5	7	8	55	946	11	13	921	110
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	2069	2069	976	2074	2118	951	1030			957		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2069	2069	976	2074	2118	951	1030			957		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	64	81	75	86	98	92			98		
cM capacity (veh/h)	32	49	305	22	45	315	674			719		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	243	20	55	957	13	1030
Volume Left	170	5	55	0	13	0
Volume Right	57	8	0	11	0	110
cSH	42	47	674	1700	719	1700
Volume to Capacity	5.83	0.42	0.08	0.56	0.02	0.61
Queue Length 95th (ft)	Err	37	7	0	1	0
Control Delay (s)	Err	129.2	10.8	0.0	10.1	0.0
Lane LOS	F	F	B		B	
Approach Delay (s)	Err	129.2	0.6		0.1	
Approach LOS	F	F				

Intersection Summary				
Average Delay	1051.5			
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	39.2
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	147	34	765	1093
Demand Flow Rate, veh/h	150	34	780	1114
Vehicles Circulating, veh/h	1056	883	124	49
Vehicles Exiting, veh/h	107	21	1082	868
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.9	8.7	19.3	57.0
Approach LOS	C	A	C	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	150	34	780	1114
Cap Entry Lane, veh/h	393	467	998	1076
Entry HV Adj Factor	0.979	0.994	0.981	0.981
Flow Entry, veh/h	147	34	765	1093
Cap Entry, veh/h	385	465	979	1055
V/C Ratio	0.382	0.073	0.781	1.035
Control Delay, s/veh	16.9	8.7	19.3	57.0
LOS	C	A	C	F
95th %tile Queue, veh	2	0	8	23

Intersection	
Intersection Delay, s/veh	63.3
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	244	20	1012	1044
Demand Flow Rate, veh/h	248	20	1032	1064
Vehicles Circulating, veh/h	957	1194	203	68
Vehicles Exiting, veh/h	175	41	1002	1146
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	22.0	11.5	87.9	50.0
Approach LOS	C	B	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	248	20	1032	1064
Cap Entry Lane, veh/h	434	342	922	1056
Entry HV Adj Factor	0.983	0.993	0.981	0.981
Flow Entry, veh/h	244	20	1012	1044
Cap Entry, veh/h	426	340	905	1035
V/C Ratio	0.571	0.058	1.119	1.008
Control Delay, s/veh	22.0	11.5	87.9	50.0
LOS	C	B	F	F
95th %tile Queue, veh	3	0	27	20

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	4	30	15	9	7	21	674	8	7	931	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1762		1770	1859		1770	1844	
Flt Permitted		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1741			1762		1770	1859		1770	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	4	33	16	10	8	23	733	9	8	1012	73
RTOR Reduction (vph)	0	10	0	0	7	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	137	0	0	27	0	23	742	0	8	1083	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		12.1			7.0		4.0	53.1		4.0	53.1	
Effective Green, g (s)		12.1			7.0		4.0	53.1		4.0	53.1	
Actuated g/C Ratio		0.13			0.08		0.04	0.58		0.04	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		228			133		76	1070		76	1062	
v/s Ratio Prot		c0.08			c0.02		c0.01	0.40		0.00	c0.59	
v/s Ratio Perm												
v/c Ratio		0.60			0.20		0.30	0.69		0.11	1.02	
Uniform Delay, d1		37.8			40.0		42.7	13.8		42.4	19.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.2			0.7		2.2	2.0		0.6	32.7	
Delay (s)		42.0			40.7		45.0	15.8		43.0	52.2	
Level of Service		D			D		D	B		D	D	
Approach Delay (s)		42.0			40.7			16.6			52.1	
Approach LOS		D			D			B			D	

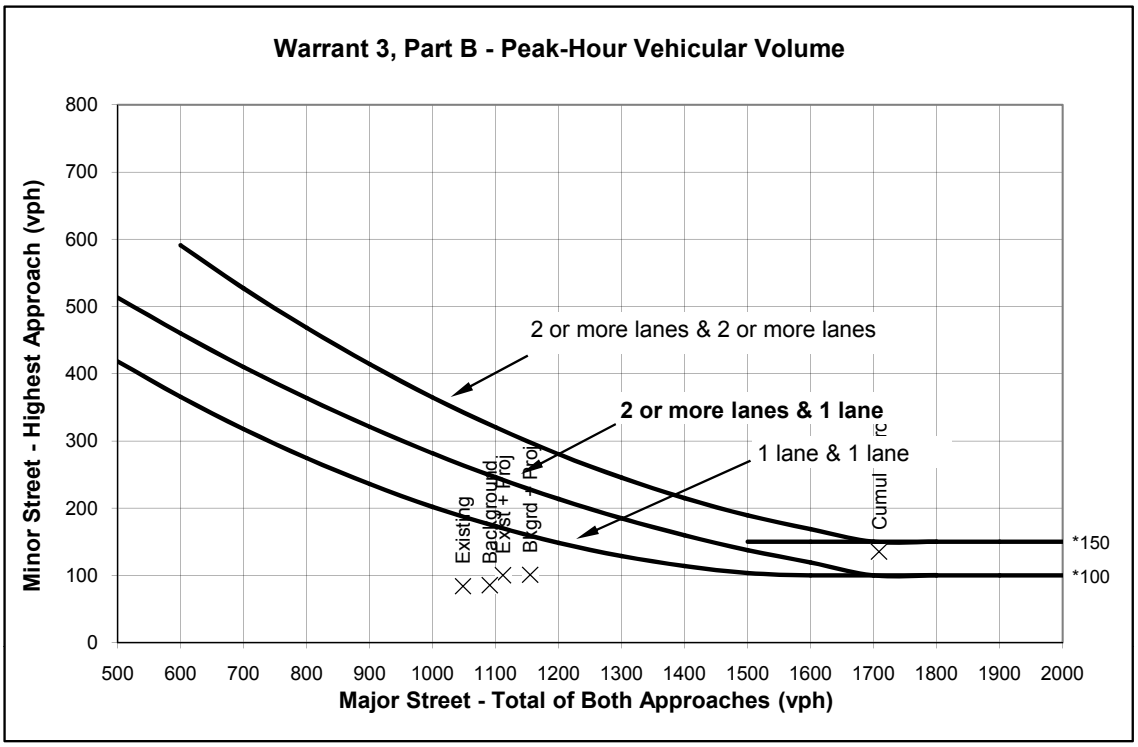
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	16	52	5	6	7	51	870	10	12	847	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1743			1740		1770	1860		1770	1833	
Flt Permitted		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1743			1740		1770	1860		1770	1833	
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)	170	17	57	5	7	8	55	946	11	13	921	110
RTOR Reduction (vph)	0	10	0	0	7	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	234	0	0	13	0	55	957	0	13	1028	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		15.9			6.4		4.0	58.0		4.0	58.0	
Effective Green, g (s)		15.9			6.4		4.0	58.0		4.0	58.0	
Actuated g/C Ratio		0.16			0.06		0.04	0.58		0.04	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		276			111		70	1075		70	1059	
v/s Ratio Prot		c0.13			c0.01		c0.03	0.51		0.01	c0.56	
v/s Ratio Perm												
v/c Ratio		0.85			0.11		0.79	0.89		0.19	0.97	
Uniform Delay, d1		41.0			44.3		47.7	18.4		46.6	20.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		20.7			0.5		42.6	9.2		1.3	20.7	
Delay (s)		61.7			44.7		90.4	27.6		47.9	41.1	
Level of Service		E			D		F	C		D	D	
Approach Delay (s)		61.7			44.7			31.0			41.1	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Big Wave North Parcel Alternative

Highway 1 and Cypress Avenue **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)*.

* 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.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Major Street - Both Approaches	Highway 1	X		1048	1112	1091	1155	1709			
Minor Street - Highest Approach	Cypress Ave	X		84	100	85	101	135			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.
Note 1: Right turn volumes were not removed from minor approaches.

Big Wave North Parcel Alternative

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: LJ date: 6/5/14

Major Street: Highway 1 — Critical Approach Speed* (mph) 50

Minor Street: Cypress Ave — Critical Approach Speed* (mph) 25

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)…… ☑ OR In built up area of isolated community of < 10,000 population…… ☐ **Rural (R)**

☐ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	AM PEAK PERIOD							
	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	36.5	51.6	41.3	60.9	819.6			
Corresponding Minor Street Approach Volume (veh/hr)	84	100	85	101	135			
Minor Street Total Delay (veh-hrs)	0.9	1.4	1.0	1.7	30.8			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	Yes	No	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**Yes**			

PART B

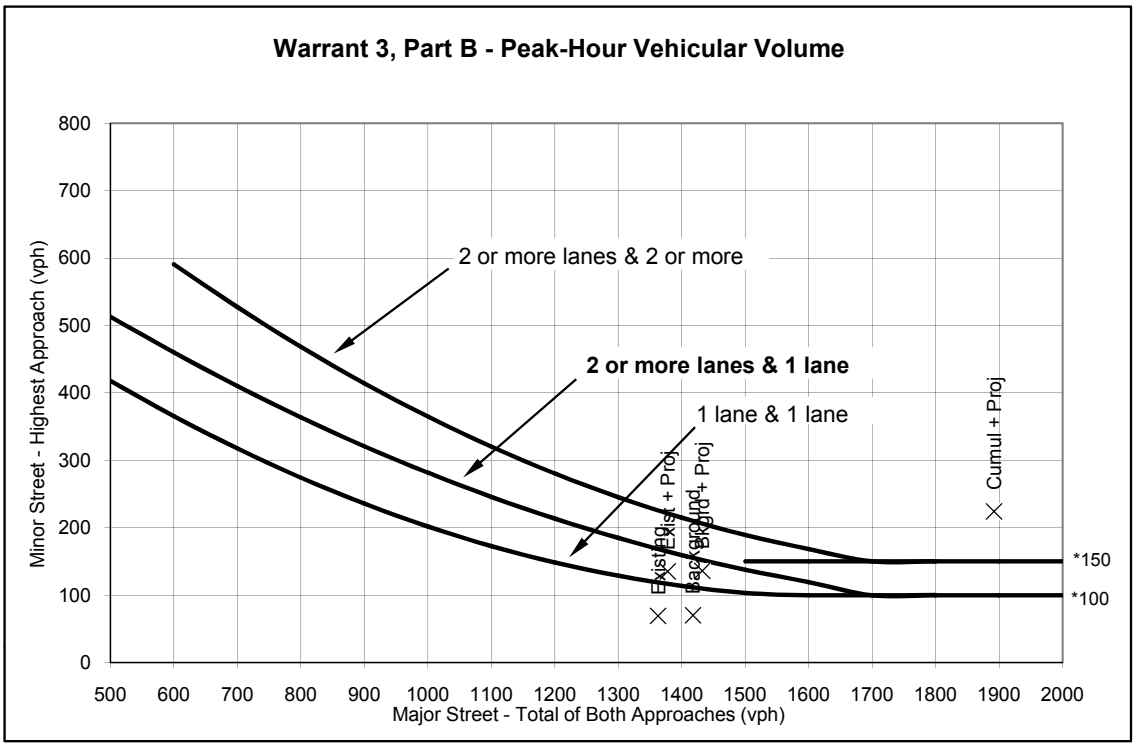
		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Major Street - Both Approaches	Highway 1	X		1048	1112	1091	1155	1709			
Minor Street - Highest Approach	Cypress Ave	X		84	100	85	101	135			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**Yes**			

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2003 Edition, as amended for use in California).

Big Wave North Parcel Alternative

Highway 1 and Cypress Avenue **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)*.

* 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.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Major Street - Both Approaches	Highway 1	X		1363	1378	1418	1433	1892			
Minor Street - Highest Approach	Cypress Ave	X		69	135	70	136	224			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**Yes**	**No**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.
Note 1: Right turn volumes were not removed from minor approaches.

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TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: LJ date: 6/5/14

Major Street: Highway 1 — Critical Approach Speed* (mph) 50

Minor Street: Cypress Ave — Critical Approach Speed* (mph) 25

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..…….. ☑

In built up area of isolated community of < 10,000 population……..…..…….. ☐ } or **Rural (R)**

☐ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	78.8	318.4	96.1	389.6	1000.0			
Corresponding Minor Street Approach Volume (veh/hr)	69	135	70	136	224			
Minor Street Total Delay (veh-hrs)	1.5	11.9	1.9	14.7	62.2			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	Yes	No	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	Yes	No	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**No**	**Yes**	**No**	**Yes**	**Yes**			

PART B

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Exist + Proj	Background	Bkgrd + Proj	Cumul + Proj			
Major Street - Both Approaches	Highway 1	X		1363	1378	1418	1433	1892			
Minor Street - Highest Approach	Cypress Ave	X		69	135	70	136	224			
Signal Warranted based on Part B?				**No**	**Yes**	**No**	**Yes**	**Yes**			

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2003 Edition, as amended for use in California).

Notes: