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ASSOCIATED GOVTS

CITY OF VICTORVILLE

CMP MONITORING - YEAR 2012

Prepared For

San Bernardino Associated Governments

August 2012

Prepared By

ALBERT GROVER & ASSOCIATES
TRANSPORTATION CONSULTING ENGINEERS

ALBERT
GROVER &
ASSOCIATES

August 14, 2012

Mr. Steve Smith
Chief of Planning
San Bernardino Associated Governments
1170 W. Third Street, 2nd Floor
San Bernardino, CA 92410

Re: City of Victorville - 2012 Annual CMP Monitoring

Dear Mr. Smith:

Albert Grover & Associates (AGA) is pleased to present this report, which documents the Level of Service (LOS) analyses conducted in the City of Victorville per the requirements of the San Bernardino County Congestion Management Program (CMP). The analyses were conducted to meet the requirements of CMP monitoring in the City of Victorville for the Year 2012.

In 2010 seven CMP intersections were analyzed in the City of Victorville. The SANBAG 2012 CMP Monitoring request list identified the following seven intersections for required monitoring:

- Bear Valley Road at Hesperia Road
- Bear Valley Road at Mariposa Road
- Palmdale Road (SR-18) at Mariposa Road/I-15 Northbound On-Ramp

Traffic Volumes

Turning movement counts for the study intersections were conducted by Counts Unlimited, Inc., during the A.M. (7:00 – 9:00) and P.M. (4:00 – 6:00) peak periods, and are provided in Appendix A.

CMP Intersection Level of Service (LOS)

For conducting intersection LOS analyses, the peak hourly traffic volumes were divided by the peak hour factor (PHF) for each movement (i.e. eastbound left, eastbound through, eastbound right, etc.). Intersection LOS analysis was calculated using the SANBAG-approved software program WEBSTER, an interactive simulation and analysis computer program developed by AGA that provides for signal timing development, capacity analysis and Level of Service A saturation flow rate of 1800 vehicles per hour per lane (vphpl) was used for through and

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exclusive right turn lanes. A saturation flow rate of 1700 vphpl was used for a single left turn lane, and a saturation flow rate of 1600 vphpl was used for dual left turn lanes.

The Delay, V/C and LOS for the study intersections are summarized in Table 1-Year 2012 CMP Intersection Analysis. For your reference, Table 1 also summarizes the seven intersections that were analyzed in 2010 and the three intersections analyzed in 2009.

A WEBSTER overview is provided in Appendix B and the level of service analysis worksheets for the study intersections are provided in Appendix C.

Please call me at (714) 992-2990, if you have any questions.

Respectfully submitted,

ALBERT GROVER & ASSOCIATES

Natali Eid
Senior Associate

CC: Brian Gengler, City of Victorville

Attachments

Projects/Victorville/172-018/Victorville CMP 2012 Report.doc

LIST OF EXHIBITS

Table 1 – Year 2012 CMP Intersection Level of Service Summary – City of Victorville

Appendix

A. Turning Movement Counts (AM & PM)

- Bear Valley Road at Mariposa Road
- Bear Valley Road at Hesperia Road
- Palmdale Road (SR-18) at Mariposa Road/I-15 Northbound On-Ramp

B. WEBSTER Program Overview

C. Level of Service Analysis using WEBSTER Program (AM & PM)

- Bear Valley Road at Mariposa Road
- Bear Valley Road at Hesperia Road
- Palmdale Road (SR-18) at Mariposa Road/I-15 Northbound On-Ramp

TABLE 1 - YEAR 2012 CMP INTERSECTION ANALYSIS
LEVEL OF SERVICE SUMMARY - CITY OF VICTORVILLE

No.	CMP Intersections		2009						2010						Year 2012						Next CMP Analysis Year
	East/West Street	North/South Street	AM			PM			AM			PM			AM			PM			
			Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS	
1	Bear Valley Road	Amargosa Road	--	--	--	--	--	--	23	0.57	C	43	0.94	D	--	--	--	--	--	--	2013
2	Bear Valley Road	Mariposa Road	24	0.77	C	55	0.97	D	--	--	--	--	--	--	**20**	**0.52**	**B**	**29**	**0.81**	**C**	**2015**
3	Bear Valley Road	Hesperia Road	35	0.76	C	55	0.89	D	--	--	--	--	--	--	**25**	**0.46**	**C**	**36**	**0.72**	**D**	**2015**
4	Bear Valley Road	US-395	--	--	--	--	--	--	46	0.62	D	39	0.61	D	--	--	--	--	--	--	2013
5	Palmdale Road (SR-18)	Mariposa Road	20	0.62	B	40	0.86	D	--	--	--	--	--	--	**20**	**0.51**	**B**	**33**	**0.68**	**C**	**2015**
6	Palmdale Road (SR-18)	Amargosa Road	--	--	--	--	--	--	43	0.71	D	44	0.84	D	--	--	--	--	--	--	2013
7	Palmdale Road (SR-18)	Kentwood Boulevard	--	--	--	--	--	--	25	0.61	C	37	0.80	D	--	--	--	--	--	--	2013
8	Palmdale Road (SR-18)	US-395	--	--	--	--	--	--	65	0.98	E	51	0.86	D	--	--	--	--	--	--	2013
9	D Street (SR-18)	7th Street	--	--	--	--	--	--	36	0.69	D	35	0.71	C	--	--	--	--	--	--	2013
10	D Street (SR-18)	Hesperia Road	--	--	--	--	--	--	22	0.83	C	27	0.89	C	--	--	--	--	--	--	2013

Notes:

1. Delay in seconds; V/C - Volume/Capacity Ratio; LOS - Level of Service
2. Vehicle delays and LOS calculations are based on the 2000 Highway Capacity Manual. LOS Analysis worksheets for Year 2010 are provided in Appendix C.

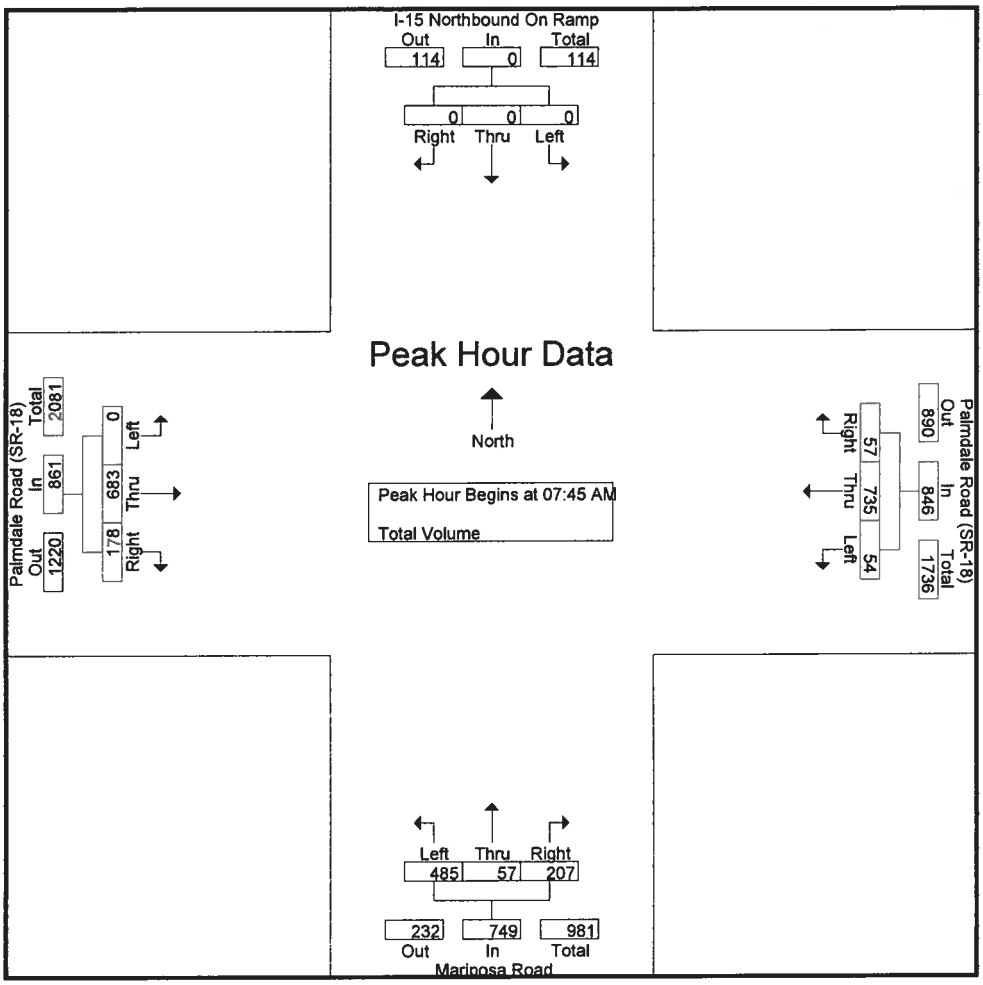
APPENDIX A

Turning Movement Counts
AM & PM Peak

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Victorville
N/S: Mariposa Road - I-15 NB On Ramp
E/W: Palmdale Road (SR-18)
Weather: Sunny

File Name : VICMAPAAM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:45 AM				07:30 AM				08:00 AM			
+0 mins.	0	0	0	0	8	**204**	**18**	**230**	109	16	38	163	0	140	29	169
+15 mins.	0	0	0	0	15	188	10	213	**157**	**21**	**62**	**240**	0	157	**50**	207
+30 mins.	0	0	0	0	12	167	13	192	109	11	42	162	0	186	37	223
+45 mins.	0	0	0	0	**19**	176	16	211	123	16	55	194	0	**225**	49	**274**
Total Volume	0	0	0	0	54	735	57	846	498	64	197	759	0	708	165	873
% App. Total	0	0	0		6.4	86.9	6.7		65.6	8.4	26		0	81.1	18.9	
PHF	.000	.000	.000	.000	.711	.901	.792	.920	.793	.762	.794	.791	.000	.787	.825	.797

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City of Victorville
N/S: Mariposa Road - I-15 NB On Ramp
E/W: Palmdale Road (SR-18)
Weather: Sunny

File Name : VICMAPAAM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 1

Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Palmdale Road (SR-18) Westbound				Mariposa Road Northbound				Palmdale Road (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	9	115	11	135	92	16	30	138	0	89	20	109	382
07:15 AM	0	0	0	0	6	147	14	167	117	14	30	161	0	102	36	138	466
07:30 AM	0	0	0	0	13	132	10	155	109	16	38	163	0	137	38	175	493
07:45 AM	0	0	0	0	8	204	18	230	157	21	62	240	0	200	62	262	732
Total	0	0	0	0	36	598	53	687	475	67	160	702	0	528	156	684	2073
08:00 AM	0	0	0	0	15	188	10	213	109	11	42	162	0	140	29	169	544
08:15 AM	0	0	0	0	12	167	13	192	123	16	55	194	0	157	50	207	593
08:30 AM	0	0	0	0	19	176	16	211	96	9	48	153	0	186	37	223	587
08:45 AM	0	0	0	0	15	184	11	210	104	12	61	177	0	225	49	274	661
Total	0	0	0	0	61	715	50	826	432	48	206	686	0	708	165	873	2385
Grand Total	0	0	0	0	97	1313	103	1513	907	115	366	1388	0	1236	321	1557	4458
Apprch %	0	0	0		6.4	86.8	6.8		65.3	8.3	26.4		0	79.4	20.6		
Total %	0	0	0	0	2.2	29.5	2.3	33.9	20.3	2.6	8.2	31.1	0	27.7	7.2	34.9	

	I-15 Northbound On Ramp Southbound				Palmdale Road (SR-18) Westbound				Mariposa Road Northbound				Palmdale Road (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	0	0	0	0	8	204	18	230	157	21	62	240	0	200	62	262	732
08:00 AM	0	0	0	0	15	188	10	213	109	11	42	162	0	140	29	169	544
08:15 AM	0	0	0	0	12	167	13	192	123	16	55	194	0	157	50	207	593
08:30 AM	0	0	0	0	19	176	16	211	96	9	48	153	0	186	37	223	587
Total Volume	0	0	0	0	54	735	57	846	485	57	207	749	0	683	178	861	2456
% App. Total	0	0	0		6.4	86.9	6.7		64.8	7.6	27.6		0	79.3	20.7		
PHF	.000	.000	.000	.000	.711	.901	.792	.920	.772	.679	.835	.780	.000	.854	.718	.822	.839

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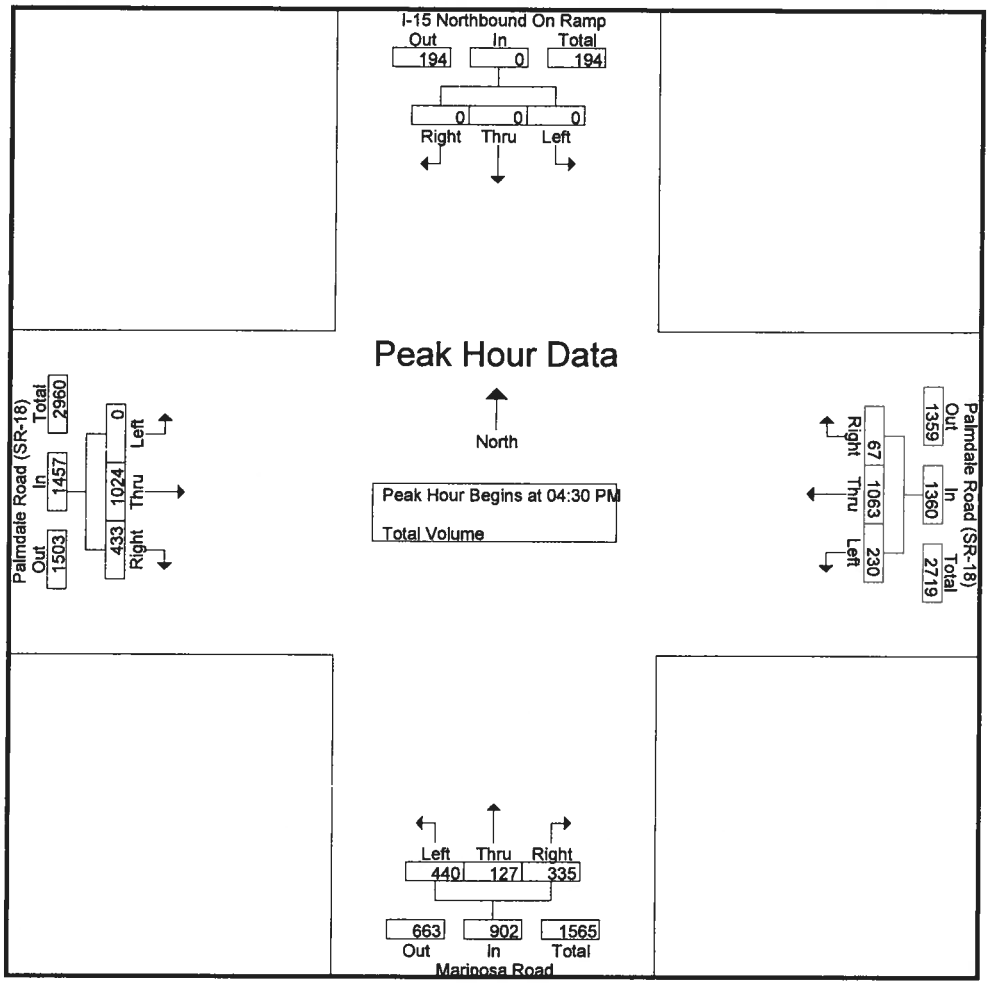
City of Victorville
N/S: Mariposa Road - I-15 NB On Ramp
E/W: Palmdale Road (SR-18)
Weather: Sunny

File Name : VICMAPAPM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	60	264	13	337	102	31	77	210	0	**272**	108	380
+15 mins.	0	0	0	0	**69**	**295**	**19**	**383**	120	20	86	226	0	246	99	345
+30 mins.	0	0	0	0	63	260	14	337	84	34	77	195	0	271	**118**	**389**
+45 mins.	0	0	0	0	39	250	15	304	**134**	**42**	**95**	**271**	0	235	108	343
Total Volume	0	0	0	0	231	1069	61	1361	440	127	335	902	0	1024	433	1457
% App. Total	0	0	0		17	78.5	4.5		48.8	14.1	37.1		0	70.3	29.7	
PHF	.000	.000	.000	.000	.837	.906	.803	.888	.821	.756	.882	.832	.000	.941	.917	.936

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Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Palmdale Road (SR-18) Westbound				Mariposa Road Northbound				Palmdale Road (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	48	252	12	312	93	29	79	201	0	256	76	332	845
04:15 PM	0	0	0	0	47	234	17	298	110	30	87	227	0	248	79	327	852
04:30 PM	0	0	0	0	38	244	21	303	102	31	77	210	0	272	108	380	893
04:45 PM	0	0	0	0	60	264	13	337	120	20	86	226	0	246	99	345	908
Total	0	0	0	0	193	994	63	1250	425	110	329	864	0	1022	362	1384	3498
05:00 PM	0	0	0	0	69	295	19	383	84	34	77	195	0	271	118	389	967
05:15 PM	0	0	0	0	63	260	14	337	134	42	95	271	0	235	108	343	951
05:30 PM	0	0	0	0	39	250	15	304	104	19	72	195	0	227	108	335	834
05:45 PM	0	0	0	0	49	221	21	291	132	20	81	233	0	196	75	271	795
Total	0	0	0	0	220	1026	69	1315	454	115	325	894	0	929	409	1338	3547
Grand Total	0	0	0	0	413	2020	132	2565	879	225	654	1758	0	1951	771	2722	7045
Apprch %	0	0	0		16.1	78.8	5.1		50	12.8	37.2		0	71.7	28.3		
Total %	0	0	0	0	5.9	28.7	1.9	36.4	12.5	3.2	9.3	25	0	27.7	10.9	38.6	

	I-15 Northbound On Ramp Southbound				Palmdale Road (SR-18) Westbound				Mariposa Road Northbound				Palmdale Road (SR-18) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:30 PM																	
04:30 PM	0	0	0	0	38	244	**21**	303	102	31	77	210	0	**272**	108	380	893
04:45 PM	0	0	0	0	60	264	13	337	120	20	86	226	0	246	99	345	908
05:00 PM	0	0	0	0	**69**	**295**	19	**383**	84	34	77	195	0	271	**118**	**389**	**967**
05:15 PM	0	0	0	0	63	260	14	337	**134**	**42**	**95**	**271**	0	235	108	343	951
Total Volume	0	0	0	0	230	1063	67	1360	440	127	335	902	0	1024	433	1457	3719
% App. Total	0	0	0		16.9	78.2	4.9		48.8	14.1	37.1		0	70.3	29.7		
PHF	.000	.000	.000	.000	.833	.901	.798	.888	.821	.756	.882	.832	.000	.941	.917	.936	.961

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City of Victorville
N/S: Hesperia Road
E/W: Bear Valley Road
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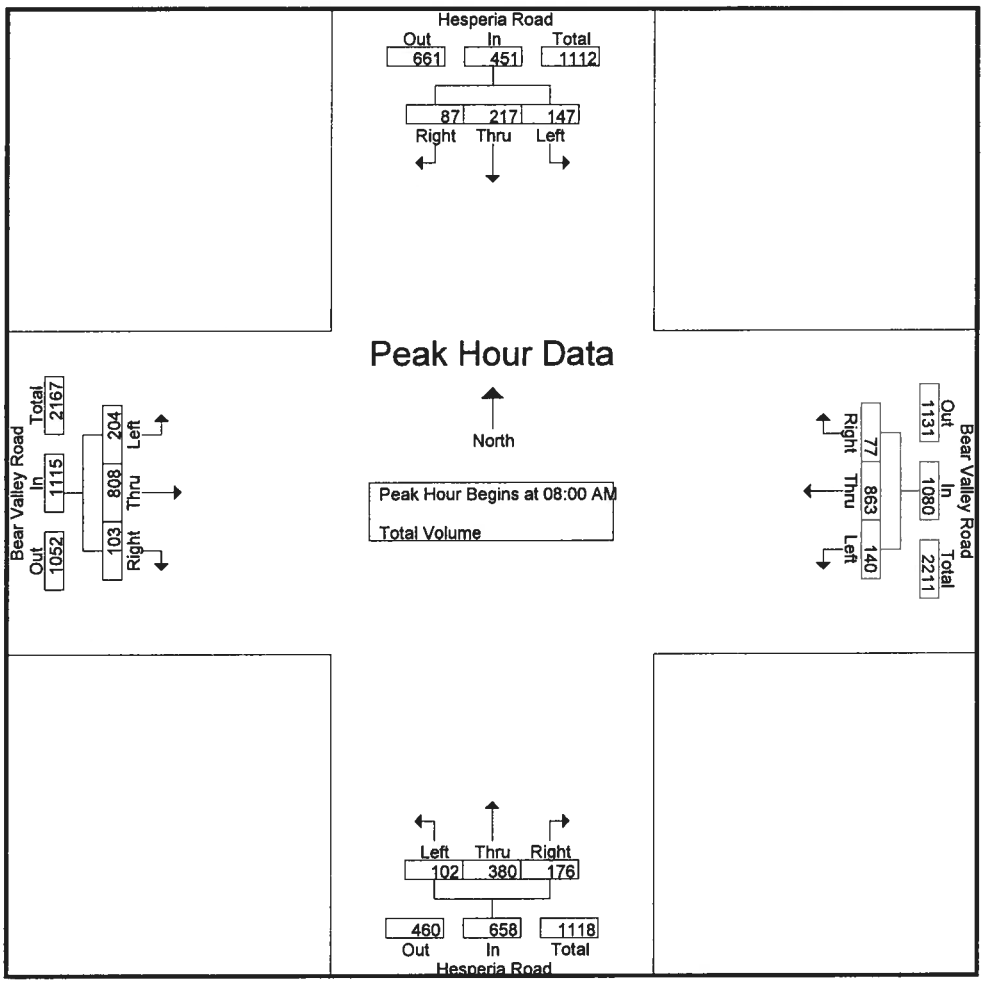
File Name : VICHEBVAM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:30 AM				07:45 AM			
+0 mins.	**40**	41	20	101	35	204	10	249	15	105	40	160	48	**219**	**30**	**297**
+15 mins.	33	58	17	108	32	198	11	241	28	**111**	**54**	**193**	47	192	21	260
+30 mins.	37	**61**	**25**	**123**	30	**242**	**30**	**302**	25	96	52	173	**56**	203	27	286
+45 mins.	37	57	25	119	43	219	26	288	**30**	91	40	161	49	196	30	275
Total Volume	147	217	87	451	140	863	77	1080	98	403	186	687	200	810	108	1118
% App. Total	32.6	48.1	19.3		13	79.9	7.1		14.3	58.7	27.1		17.9	72.5	9.7	
PHF	.919	.889	.870	.917	.814	.892	.642	.894	.817	.908	.861	.890	.893	.925	.900	.941

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N/S: Hesperia Road
E/W: Bear Valley Road
Weather: Sunny

File Name : VICHEBVAM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 1

Groups Printed- Total Volume

	Hesperia Road Southbound				Bear Valley Road Westbound				Hesperia Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	35	30	9	74	32	199	20	251	19	63	28	110	24	136	12	172	607
07:15 AM	25	38	10	73	34	190	18	242	12	70	33	115	25	182	13	220	650
07:30 AM	30	48	18	96	40	222	21	283	15	105	40	160	36	184	18	238	777
07:45 AM	31	57	12	100	47	214	22	283	28	111	54	193	48	219	30	297	873
Total	121	173	49	343	153	825	81	1059	74	349	155	578	133	721	73	927	2907
08:00 AM	40	41	20	101	35	204	10	249	25	96	52	173	47	192	21	260	783
08:15 AM	33	58	17	108	32	198	11	241	30	91	40	161	56	203	27	286	796
08:30 AM	37	61	25	123	30	242	30	302	21	83	38	142	49	196	30	275	842
08:45 AM	37	57	25	119	43	219	26	288	26	110	46	182	52	217	25	294	883
Total	147	217	87	451	140	863	77	1080	102	380	176	658	204	808	103	1115	3304
Grand Total	268	390	136	794	293	1688	158	2139	176	729	331	1236	337	1529	176	2042	6211
Apprch %	33.8	49.1	17.1		13.7	78.9	7.4		14.2	59	26.8		16.5	74.9	8.6		
Total %	4.3	6.3	2.2	12.8	4.7	27.2	2.5	34.4	2.8	11.7	5.3	19.9	5.4	24.6	2.8	32.9	

	Hesperia Road Southbound				Bear Valley Road Westbound				Hesperia Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 08:00 AM																	
08:00 AM	**40**	41	20	101	35	204	10	249	25	96	**52**	173	47	192	21	260	783
08:15 AM	33	58	17	108	32	198	11	241	**30**	91	40	161	**56**	203	27	286	796
08:30 AM	37	**61**	**25**	**123**	30	**242**	**30**	**302**	21	83	38	142	49	196	**30**	275	842
08:45 AM	37	57	25	119	**43**	219	26	288	26	**110**	46	**182**	52	**217**	25	**294**	**883**
Total Volume	147	217	87	451	140	863	77	1080	102	380	176	658	204	808	103	1115	3304
% App. Total	32.6	48.1	19.3		13	79.9	7.1		15.5	57.8	26.7		18.3	72.5	9.2		
PHF	.919	.889	.870	.917	.814	.892	.642	.894	.850	.864	.846	.904	.911	.931	.858	.948	.935

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City of Victorville
N/S: Hesperia Road
E/W: Bear Valley Road
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File Name : VICHEBVPM
Site Code : 00000066
Start Date : 7/31/2012
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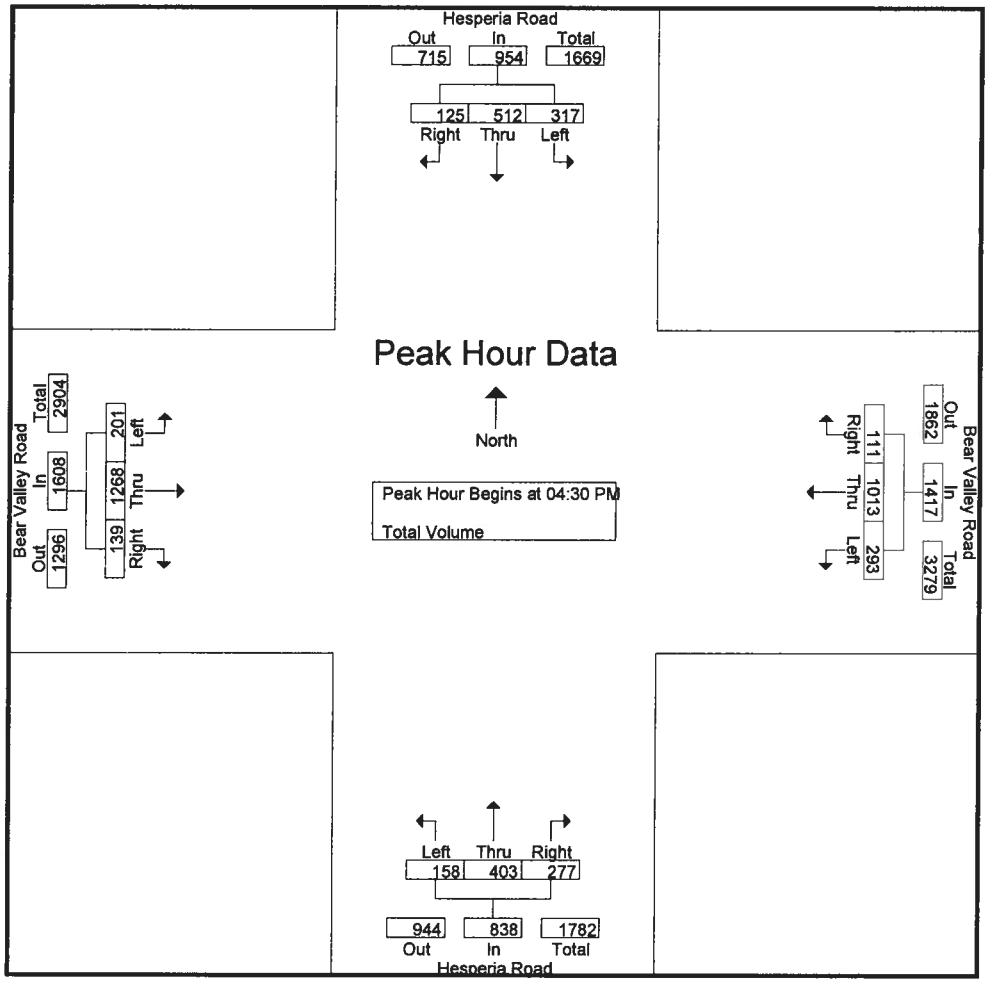

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	81	140	22	243	68	248	**32**	348	**55**	105	74	**234**	**58**	296	43	397
+15 mins.	82	**152**	33	**267**	**80**	228	31	339	37	**112**	**85**	234	55	282	**49**	386
+30 mins.	63	119	**41**	223	76	251	26	353	38	106	60	204	55	**325**	37	417
+45 mins.	**84**	122	20	226	69	**286**	22	**377**	37	70	62	169	58	319	42	**419**
Total Volume	310	533	116	959	293	1013	111	1417	167	393	281	841	226	1222	171	1619
% App. Total	32.3	55.6	12.1		20.7	71.5	7.8		19.9	46.7	33.4		14	75.5	10.6	
PHF	.923	.877	.707	.898	.916	.885	.867	.940	.759	.877	.826	.899	.974	.940	.872	.966

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File Name : VICHEBVPM
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Groups Printed- Total Volume

	Hesperia Road Southbound				Bear Valley Road Westbound				Hesperia Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	74	118	30	222	57	273	43	373	48	106	53	207	58	296	43	397	1199
04:15 PM	61	109	45	215	62	255	28	345	35	90	67	192	55	282	49	386	1138
04:30 PM	91	101	29	221	68	248	32	348	28	80	58	166	55	325	37	417	1152
04:45 PM	81	140	22	243	80	228	31	339	55	105	74	234	58	319	42	419	1235
Total	307	468	126	901	267	1004	134	1405	166	381	252	799	226	1222	171	1619	4724
05:00 PM	82	152	33	267	76	251	26	353	37	112	85	234	38	268	27	333	1187
05:15 PM	63	119	41	223	69	286	22	377	38	106	60	204	50	356	33	439	1243
05:30 PM	84	122	20	226	63	235	22	320	37	70	62	169	48	271	35	354	1069
05:45 PM	69	107	23	199	54	243	16	313	27	70	59	156	42	295	25	362	1030
Total	298	500	117	915	262	1015	86	1363	139	358	266	763	178	1190	120	1488	4529
Grand Total	605	968	243	1816	529	2019	220	2768	305	739	518	1562	404	2412	291	3107	9253
Apprch %	33.3	53.3	13.4		19.1	72.9	7.9		19.5	47.3	33.2		13	77.6	9.4		
Total %	6.5	10.5	2.6	19.6	5.7	21.8	2.4	29.9	3.3	8	5.6	16.9	4.4	26.1	3.1	33.6	

	Hesperia Road Southbound				Bear Valley Road Westbound				Hesperia Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:30 PM																	
04:30 PM	**91**	101	29	221	68	248	**32**	348	28	80	58	166	55	325	37	417	1152
04:45 PM	81	140	22	243	**80**	228	31	339	**55**	105	74	**234**	**58**	319	**42**	419	1235
05:00 PM	82	**152**	33	**267**	76	251	26	353	37	**112**	**85**	234	38	268	27	333	1187
05:15 PM	63	119	**41**	223	69	**286**	22	**377**	38	106	60	204	50	**356**	33	**439**	**1243**
Total Volume	317	512	125	954	293	1013	111	1417	158	403	277	838	201	1268	139	1608	4817
% App. Total	33.2	53.7	13.1		20.7	71.5	7.8		18.9	48.1	33.1		12.5	78.9	8.6		
PHF	.871	.842	.762	.893	.916	.885	.867	.940	.718	.900	.815	.895	.866	.890	.827	.916	.969

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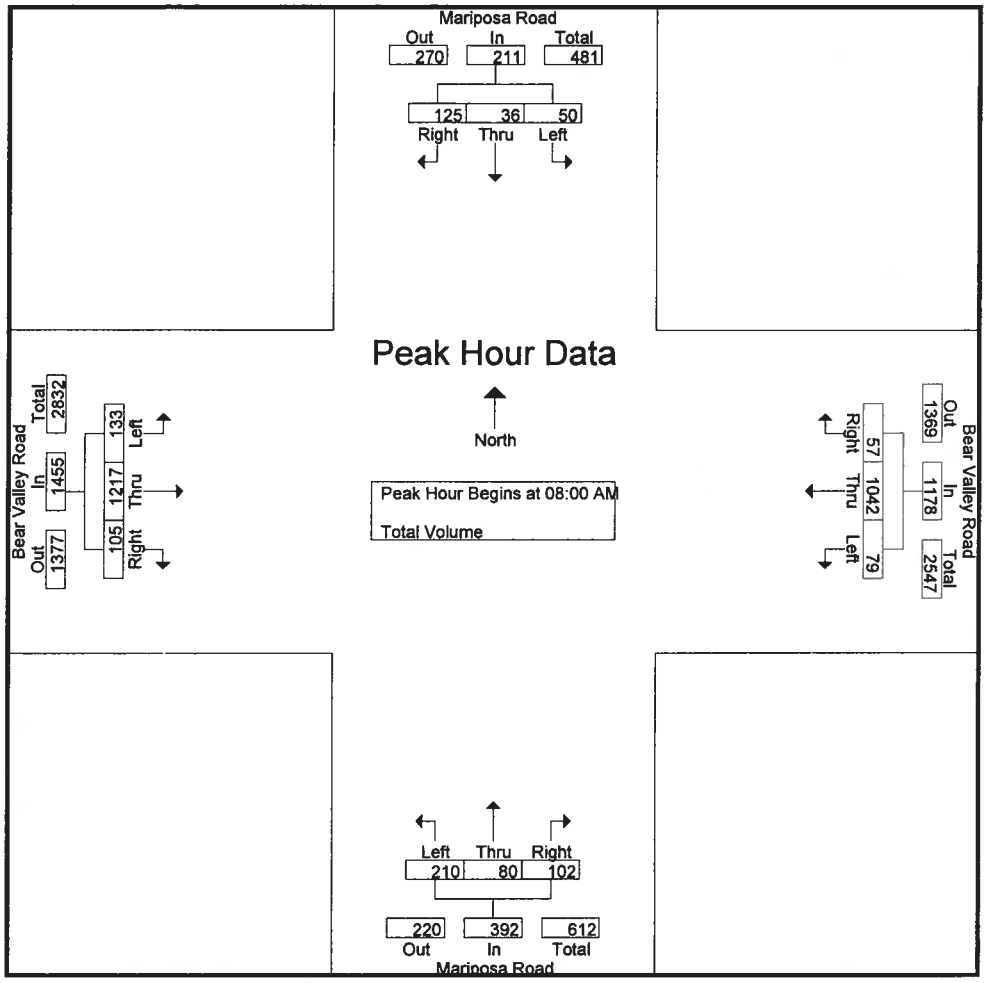
City of Victorville
N/S: Mariposa Road
E/W: Bear Valley Road
Weather: Sunny

File Name : VICMABVAM
Site Code : 00000066
Start Date : 7/31/2012
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	**14**	9	26	49	**22**	253	13	288	54	12	28	94	30	301	**29**	360
+15 mins.	13	7	30	50	19	259	15	293	54	22	23	99	27	282	18	327
+30 mins.	11	**10**	**39**	**60**	21	**272**	13	**306**	**56**	19	20	95	25	**338**	29	**392**
+45 mins.	12	10	30	52	17	258	**16**	291	46	**27**	**31**	**104**	**51**	296	29	376
Total Volume	50	36	125	211	79	1042	57	1178	210	80	102	392	133	1217	105	1455
% App. Total	23.7	17.1	59.2		6.7	88.5	4.8		53.6	20.4	26		9.1	83.6	7.2	
PHF	.893	.900	.801	.879	.898	.958	.891	.962	.938	.741	.823	.942	.652	.900	.905	.928

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Groups Printed- Total Volume

	Mariposa Road Southbound				Bear Valley Road Westbound				Mariposa Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	5	22	35	22	271	9	302	45	10	11	66	30	193	17	240	643
07:15 AM	7	5	22	34	18	256	6	280	63	17	16	96	17	247	17	281	691
07:30 AM	6	4	25	35	15	263	8	286	48	19	16	83	29	321	30	380	784
07:45 AM	4	8	25	37	24	248	9	281	56	23	24	103	21	302	37	360	781
Total	25	22	94	141	79	1038	32	1149	212	69	67	348	97	1063	101	1261	2899
08:00 AM	14	9	26	49	22	253	13	288	54	12	28	94	30	301	29	360	791
08:15 AM	13	7	30	50	19	259	15	293	54	22	23	99	27	282	18	327	769
08:30 AM	11	10	39	60	21	272	13	306	56	19	20	95	25	338	29	392	853
08:45 AM	12	10	30	52	17	258	16	291	46	27	31	104	51	296	29	376	823
Total	50	36	125	211	79	1042	57	1178	210	80	102	392	133	1217	105	1455	3236
Grand Total	75	58	219	352	158	2080	89	2327	422	149	169	740	230	2280	206	2716	6135
Apprch %	21.3	16.5	62.2		6.8	89.4	3.8		57	20.1	22.8		8.5	83.9	7.6		
Total %	1.2	0.9	3.6	5.7	2.6	33.9	1.5	37.9	6.9	2.4	2.8	12.1	3.7	37.2	3.4	44.3	

	Mariposa Road Southbound				Bear Valley Road Westbound				Mariposa Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 08:00 AM																	
08:00 AM	14	9	26	49	22	253	13	288	54	12	28	94	30	301	29	360	791
08:15 AM	13	7	30	50	19	259	15	293	54	22	23	99	27	282	18	327	769
08:30 AM	11	10	39	60	21	272	13	306	56	19	20	95	25	338	29	392	853
08:45 AM	12	10	30	52	17	258	16	291	46	27	31	104	51	296	29	376	823
Total Volume	50	36	125	211	79	1042	57	1178	210	80	102	392	133	1217	105	1455	3236
% App. Total	23.7	17.1	59.2		6.7	88.5	4.8		53.6	20.4	26		9.1	83.6	7.2		
PHF	.893	.900	.801	.879	.898	.958	.891	.962	.938	.741	.823	.942	.652	.900	.905	.928	.948

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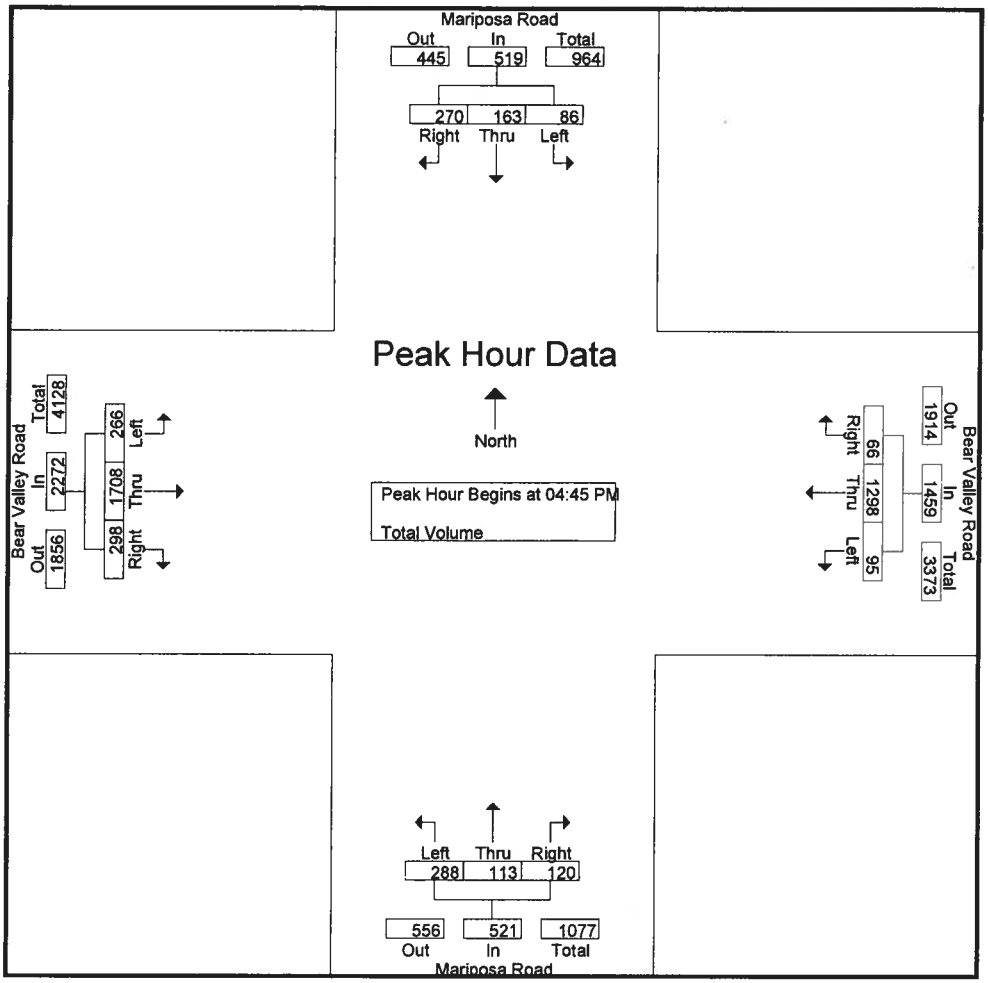

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:45 PM				04:15 PM			
+0 mins.	22	33	60	115	20	328	15	363	67	**31**	31	129	62	438	**86**	**586**
+15 mins.	18	39	78	135	21	**336**	**22**	**379**	70	30	28	128	66	428	67	561
+30 mins.	19	**46**	**79**	**144**	**27**	320	20	367	**83**	30	**35**	**148**	**67**	**445**	70	582
+45 mins.	**24**	43	62	129	27	312	14	353	68	22	26	116	62	410	73	545
Total Volume	83	161	279	523	95	1296	71	1462	288	113	120	521	257	1721	296	2274
% App. Total	15.9	30.8	53.3		6.5	88.6	4.9		55.3	21.7	23		11.3	75.7	13	
PHF	.865	.875	.883	.908	.880	.964	.807	.964	.867	.911	.857	.880	.959	.967	.860	.970

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File Name : VICMABVPM
Site Code : 00000066
Start Date : 7/31/2012
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Groups Printed- Total Volume

	Mariposa Road Southbound				Bear Valley Road Westbound				Mariposa Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	20	30	57	107	20	328	15	363	64	15	17	96	55	395	90	540	1106
04:15 PM	15	26	55	96	21	336	22	379	63	19	29	111	62	438	86	586	1172
04:30 PM	22	33	60	115	27	320	20	367	68	20	18	106	66	428	67	561	1149
04:45 PM	18	39	78	135	27	312	14	353	67	31	31	129	67	445	70	582	1199
Total	75	128	250	453	95	1296	71	1462	262	85	95	442	250	1706	313	2269	4626
05:00 PM	19	46	79	144	29	308	12	349	70	30	28	128	62	410	73	545	1166
05:15 PM	24	43	62	129	23	341	21	385	83	30	35	148	72	418	79	569	1231
05:30 PM	25	35	51	111	16	337	19	372	68	22	26	116	65	435	76	576	1175
05:45 PM	8	37	62	107	22	308	22	352	77	22	22	121	70	421	66	557	1137
Total	76	161	254	491	90	1294	74	1458	298	104	111	513	269	1684	294	2247	4709
Grand Total	151	289	504	944	185	2590	145	2920	560	189	206	955	519	3390	607	4516	9335
Apprch %	16	30.6	53.4		6.3	88.7	5		58.6	19.8	21.6		11.5	75.1	13.4		
Total %	1.6	3.1	5.4	10.1	2	27.7	1.6	31.3	6	2	2.2	10.2	5.6	36.3	6.5	48.4	

	Mariposa Road Southbound				Bear Valley Road Westbound				Mariposa Road Northbound				Bear Valley Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	18	39	78	135	27	312	14	353	67	**31**	31	129	67	**445**	70	**582**	1199
05:00 PM	19	**46**	**79**	**144**	**29**	308	12	349	70	30	28	128	62	410	73	545	1166
05:15 PM	24	43	62	129	23	**341**	**21**	**385**	**83**	30	**35**	**148**	**72**	418	**79**	569	**1231**
05:30 PM	**25**	35	51	111	16	337	19	372	68	22	26	116	65	435	76	576	1175
Total Volume	86	163	270	519	95	1298	66	1459	288	113	120	521	266	1708	298	2272	4771
% App. Total	16.6	31.4	52		6.5	89	4.5		55.3	21.7	23		11.7	75.2	13.1		
PHF	.860	.886	.854	.901	.819	.952	.786	.947	.867	.911	.857	.880	.924	.960	.943	.976	.969

APPENDIX B

WEBSTER Program Overview

CAPACITY, LEVEL OF SERVICE
AND
SIGNAL TIMING ANALYSIS

WEBSTER Overview

WEBSTER is an interactive simulation and analysis program that provides for signal timing development, capacity analysis, queuing analysis, Level of Service (LOS) determination and numerous "What If" scenarios for individual intersections. WEBSTER is an acronym for **WE**bster **B**ased **S**ignal **T**iming **E**valuation **R**outine. The program is a valuable tool for both short and long term planning purposes, for signal design determinations, and for operational evaluations.

The WEBSTER program determines the Level of Service based on the Year 2010 Highway Capacity Manual (HCM) methodology as follows:

Level of Service	Veh. Delay (seconds)
A (minimal delay)	0 to 10
B (short delay)	10.1 to 20
C (average delay)	20.1 to 35
D (long delay)	35.1 to 55
E (very long delay)	55.1 to 80
F (extreme delay or jammed)	Over 80 or V/C > 1.00

The WEBSTER program can be used to obtain three different solutions: minimum delay cycle time, pre-determined cycle time and required optimum cycle time.

The main input data for WEBSTER are:

- Peak Hour Turning Movement Counts
- Phasing Sequence
- Saturation Flow Rates and Number of Lanes
- Minimum Split Times (defaults provided)
- Progression Factors (defaults provided)

Using WEBSTER, it is possible to test various scenarios at the study intersection. That is, WEBSTER can be run several times at the study intersection to test the impact of various conditions. This is useful for traffic impact analysis and Environmental Impact Reports (EIR) for both "before" and "after" conditions. Additionally, WEBSTER is a useful tool in street/intersection improvement evaluations. The program can be used to evaluate the existing signal timing at a particular intersection or to identify the optimum cycle length when developing new coordination timing, as well as to develop the splits at an intersection. WEBSTER is most useful for personnel familiar with signal operations

who can start using the program immediately. WEBSTER is only intended to serve as a tool for an intelligent analyzer; it would be improper for an uninformed user to merely input raw data and generate output, without engineering evaluation.

The output features of WEBSTER include the following:

- Provides the capability to optimize the green splits at the intersection using the HCM 2010 control delay equation.
- Identifies the optimum (i.e., minimum delay) cycle length for either vehicles only or considering both vehicles and pedestrian clearance times.
- Calculates delay for each lane group and determines the intersection LOS per HCM 2010.
- Provides the average queue (in vehicles) and the design queue length or required storage length (in feet) at the study intersection, based on certain input data and on a per lane basis.
- Allows the user to optimize splits while satisfying all minimum split times, including pedestrian crossing times.
- Optimizes traffic signal settings and/or measures project traffic impacts at a single signalized intersection.
- Evaluates protected/permissive left-turn phasing and considers signal coordination benefits in the analysis.

APPENDIX C

Level of Service Analyses

Bear Valley Road/Mariposa Road

WEBSTER

WEbster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Mariposa Rd. @ Bear Valley Rd. **Victorville** **AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	L	*T*	R	L	T	*R*
Movement 1: **16** secs	X	X	X									
Movement 2: **31** secs		X	X		X	X						
Movement 3: **10** secs				X	X	X						
Movement 4: **16** secs										X	X	X
Movement 5: **17** secs							X	X	X			
Movement 6: **0** secs												
# of Lanes (#, S, P)	1	3	S	1	3	S	S	2	1	1	1	1
Unadjusted Volume	133	1217	105	79	1042	57	210	80	102	50	36	125
Peak Hour Factor (PHF)	0.93	0.93	0.93	0.96	0.96	0.96	0.94	0.94	0.94	0.88	0.88	0.88
Min/Ped Time Override (sec)	10	25	25	10	22	22	13	13	13	14	14	14
Progression Adj. Factor (PAF)	0.70	0.70	-	1.00	0.70	-	-	1.00	1.00	1.00	1.00	1.00

Output

		***		***				***				***
Peak Hour Volume (vph)	143	1309	113	82	1085	59	223	85	109	57	41	142
Saturation Flow (vph)	1700	5400	Shrd	1700	5400	Shrd	Shrd	3600	1800	1700	1800	1800
X or Volume/Capacity	0.54	0.53	-	0.54	0.49	-	-	0.51	0.36	0.22	0.15	0.51
Effective Green (sec)	14	45	-	8	39	-	-	15	15	14	14	14
Split Time (sec)	16	47	-	10	41	-	-	17	17	16	16	16
Min. Time or Ped. Time (sec)	10	25	-	10	22	-	-	13	13	14	14	14
Delay - 15 min pk (sec/veh)	32	11	-	53	14	-	-	37	37	35	34	41
Level of Service (LOS)	C-	B	-	D-	B	-	-	D+	D+	D+	C-	D
Average 'Q' (veh/ln)	2	4	-	2	4	-	-	3	2	1	1	3
Design 'Q'-ft/ln (1.5*Qavg)	60	120	-	60	120	-	-	100	60	40	40	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	19	Weighted Average Delay (seconds) =	20
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.52

Predetermined Cycle Length is 90 sec

Min./Ped. Times Satisfied

Analysis Based on User Selected Splits

Notes: Permissive SBL - East X-Walk Pedestrian Sharing during Northbound and Southbound Movements

WEBSTER

WEbster **B**ased **S**ignal **T**iming **E**valuation **R**outine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Mariposa Rd. @ Bear Valley Rd. **Victorville** **PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	L	*T*	R	L	T	*R*
Movement 1: **21** secs	X	X	X									
Movement 2: **24** secs		X	X		X	X						
Movement 3: **10** secs				X	X	X						
Movement 4: **20** secs										X	X	X
Movement 5: **15** secs							X	X	X			
Movement 6: **0** secs												
# of Lanes (#, S, P)	1	3	S	1	3	S	S	2	1	1	1	1
Unadjusted Volume	266	1721	298	95	1298	71	288	113	120	86	163	279
Peak Hour Factor (PHF)	0.97	0.97	0.97	0.96	0.96	0.96	0.88	0.88	0.88	0.91	0.91	0.91
Min/Ped Time Override (sec)	20	25	25	10	22	22	12	12	12	15	15	15
Progression Adj. Factor (PAF)	1.00	0.70	-	1.00	1.00	-	-	1.00	1.00	1.00	1.00	1.00

Output

		***		***				***				***
Peak Hour Volume (vph)	274	1774	307	99	1352	74	327	128	136	95	179	307
Saturation Flow (vph)	1700	5400	Shrd	1700	5400	Shrd	Shrd	3600	1800	1700	1800	1800
X or Volume/Capacity	0.76	0.81	-	0.66	0.74	-	-	0.88	0.52	0.28	0.50	0.85
Effective Green (sec)	19	43	-	8	32	-	-	13	13	18	18	18
Split Time (sec)	21	45	-	10	34	-	-	15	15	20	20	20
Min. Time or Ped. Time (sec)	20	25	-	10	22	-	-	12	12	15	15	15
Delay - 15 min pk (sec/veh)	48	17	-	60	28	-	-	56	43	33	37	57
Level of Service (LOS)	D	B	-	E+	C	-	-	E+	D	C-	D+	E+
Average 'Q' (veh/ln)	6	6	-	2	8	-	-	5	3	2	4	7
Design 'Q'-ft/ln (1.5*Qavg)	180	180	-	60	240	-	-	160	100	60	120	220
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	31	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C-	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.81

Predetermined Cycle Length is 90 sec
Min./Ped. Times Satisfied
Analysis Based on User Selected Splits

Notes: Permissive SBL - East X-Walk Pedestrian Sharing during Northbound and Southbound Movements

Bear Valley Road/Hesperia Road

WEBSTER

WEbster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Bear Valley Rd @ Hesperia Rd **City of Victorville** **AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Phase Number	5	2		1	6		3	8		7	4	
Movement 1: **13** secs	X			X								
Movement 2: **31** secs		X	X		X	X						
Movement 3: **11** secs										X	X	X
Movement 4: **23** secs								X	X		X	X
Movement 5: **12** secs							X	X	X			
Movement 6: **0** secs												
# of Lanes (#, S, P)	2	3	1	2	3	1	1	2	1	2	2	S
Unadjusted Volume	204	810	108	140	863	77	102	403	186	147	217	87
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.89	0.89	0.89	0.89	0.89	0.89	0.92	0.92	0.92
Min/Ped Time Override (sec)	10	27	27	10	27	27	12	33	33	10	30	30
Progression Adj. Factor (PAF)	1.00	0.70	1.00	1.00	0.70	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***				***			***		***		
Peak Hour Volume (vph)	217	862	115	157	970	87	115	453	209	160	236	95
Saturation Flow (vph)	3200	5400	1800	3200	5400	1800	1700	3600	1800	3200	3600	Shrd
X or Volume/Capacity	0.55	0.50	0.20	0.40	0.56	0.15	0.61	0.34	0.32	0.50	0.26	-
Effective Green (sec)	11	29	29	11	29	29	10	33	33	9	32	-
Split Time (sec)	13	31	31	13	31	31	12	35	35	11	34	-
Min. Time or Ped. Time (sec)	10	27	27	10	27	27	12	33	33	10	30	-
Delay - 15 min pk (sec/veh)	43	18	23	40	19	22	52	21	22	44	21	-
Level of Service (LOS)	D	B	C+	D+	B	C+	D-	C+	C+	D	C+	-
Average 'Q' (veh/ln)	2	3	2	2	4	1	3	4	3	2	3	-
Design 'Q'-ft/ln (1.5*Qavg)	60	100	60	60	120	40	100	120	100	60	100	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	25	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C+	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.46

Predetermined Cycle Length is 90 sec

Min./Ped. Times Satisfied

WEBSTER

WEbster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Bear Valley Rd @ Hesperia Rd **City of Victorville** **PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Phase Number	5	2		1	6		3	8		7	4	
Movement 1: **10** secs	X			X								
Movement 2: **3** secs				X	X	X						
Movement 3: **29** secs		X	X		X	X						
Movement 4: **15** secs							X			X		
Movement 5: **0** secs										X	X	X
Movement 6: **33** secs								X	X		X	X
# of Lanes (#, S, P)	2	3	1	2	3	1	1	2	1	2	2	S
Unadjusted Volume	226	1268	171	293	1013	111	167	403	281	317	533	125
Peak Hour Factor (PHF)	0.97	0.97	0.97	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90
Min/Ped Time Override (sec)	10	27	27	10	27	27	12	33	33	10	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

		***		***			***				***	
Peak Hour Volume (vph)	233	1307	176	312	1078	118	186	448	312	352	592	139
Saturation Flow (vph)	3200	5400	1800	3200	5400	1800	1700	3600	1800	3200	3600	Shrd
X or Volume/Capacity	0.82	0.81	0.33	0.80	0.60	0.20	0.76	0.36	0.50	0.76	0.59	-
Effective Green (sec)	8	27	27	11	30	30	13	31	31	13	31	-
Split Time (sec)	10	29	29	13	32	32	15	33	33	15	33	-
Min. Time or Ped. Time (sec)	10	27	27	10	27	27	12	33	33	10	30	-
Delay - 15 min pk (sec/veh)	63	34	26	54	26	22	56	23	26	48	26	-
Level of Service (LOS)	E	C-	C	D-	C	C+	E+	C+	C	D	C	-
Average 'Q' (veh/ln)	3	8	3	4	6	2	4	4	5	4	6	-
Design 'Q'-ft/ln (1.5*Qavg)	100	240	100	120	180	60	120	120	160	120	180	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	36
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.72

Predetermined Cycle Length is 90 sec
Min./Ped. Times Satisfied

Palmdale Road/Mariposa Road/I-15 NB On-Ramp

WEBSTER

WEbster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Palmdale @ Mariposa/I15 NB On-Ramp **City of Victorville** **AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	L	*T*	R	L	T	R
Movement 1: **13** secs				X	X	X			X			
Movement 2: **35** secs		X	X		X	X						
Movement 3: **42** secs			X				X	X	X			
Movement 4: **0** secs												
Movement 5: **0** secs												
Movement 6: **0** secs												
# of Lanes (#, S, P)		2	1	1	2	S	S	2	1			
Unadjusted Volume		708	178	54	735	57	498	64	207			
Peak Hour Factor (PHF)		0.80	0.80	0.92	0.92	0.92	0.79	0.79	0.79			
Min/Ped Time Override (sec)		29	29	12	29	29	34	34	34			
Progression Adj. Factor (PAF)		0.70	1.00	1.00	0.70	-	-	1.00	1.00			

Output

		***		***				***				
Peak Hour Volume (vph)		885	222	59	799	62	630	81	262			
Saturation Flow (vph)		3600	1800	1700	3600	Shrd	Shrd	3600	1800			
X or Volume/Capacity		0.67	0.15	0.28	0.47	-	-	0.44	0.25			
Effective Green (sec)		33	75	11	46	-	-	40	53			
Split Time (sec)		35	77	13	48	-	-	42	55			
Min. Time or Ped. Time (sec)		29	29	12	29	-	-	34	34			
Delay - 15 min pk (sec/veh)		19	2	39	11	-	-	18	9			
Level of Service (LOS)		B	A	D+	B	-	-	B	A			
Average 'Q' (veh/ln)		5	1	1	4	-	-	5	3			
Design 'Q'-ft/ln (1.5*Qavg)		160	40	40	120	-	-	160	100			
Do Vehicles Clear?		YES	YES	YES	YES	-	-	YES	YES			

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	15	Weighted Average Delay (seconds) =	20
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.51

Predetermined Cycle Length is 90 sec
Min./Ped. Times Satisfied
Analysis Based on User Selected Splits

WEBSTER

WEbster **B**ased **S**ignal **T**iming **E**valuation **R**outine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 CMP

Palmdale @ Mariposa/I15 NB On-Ramp **City of Victorville** **PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)		10	Sat Flow (1 Left lane, vphg)	1700	1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)	3200	3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)	1800	1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	L	*T*	R	L	T	R
Movement 1: **30** secs				X	X	X			X			
Movement 2: **52** secs		X	X		X	X						
Movement 3: **38** secs			X				X	X	X			
Movement 4: **0** secs												
Movement 5: **0** secs												
Movement 6: **0** secs												
# of Lanes (#, S, P)		2	1	1	2	S	S	2	1			
Unadjusted Volume		1024	433	231	1069	67	440	127	335			
Peak Hour Factor (PHF)		0.94	0.94	0.89	0.89	0.89	0.83	0.83	0.83			
Min/Ped Time Override (sec)		29	29	12	29	29		34	34			
Progression Adj. Factor (PAF)		0.70	1.00	1.00	0.70	-	-	1.00	1.00			

Output

		***		***				***				
Peak Hour Volume (vph)		1089	461	260	1201	75	530	153	404			
Saturation Flow (vph)		3600	1800	1700	3600	Shrd	Shrd	3600	1800			
X or Volume/Capacity		0.73	0.35	0.66	0.53	-	-	0.63	0.41			
Effective Green (sec)		50	88	28	80	-	-	36	66			
Split Time (sec)		52	90	30	82	-	-	38	68			
Min. Time or Ped. Time (sec)		29	29	12	29	-	-	34	34			
Delay - 15 min pk (sec/veh)		24	6	50	8	-	-	39	17			
Level of Service (LOS)		C+	A	D	A	-	-	D+	B			
Average 'Q' (veh/ln)		7	4	7	5	-	-	8	6			
Design 'Q'-ft/ln (1.5*Qavg)		220	120	220	160	-	-	240	180			
Do Vehicles Clear?		YES	YES	YES	YES	-	-	YES	YES			

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	21	Weighted Average Delay (seconds) =	33
Level of Service - LOS =	C+	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.68

Predetermined Cycle Length is 120 sec
Min./Ped. Times Satisfied
Analysis Based on User Selected Splits