City of Hesperia

Gateway to the High Desert

July 2, 2012

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JUL - 5 2012
SAN BERNARDINO ASSOCIATED GOVTS

Steve Smith
San Bernardino Associated Governments
1170 W. 3rd St., 2nd Floor
San Bernardino, CA 92401

Re: 2012 CMP Monitoring

Dear Mr. Smith:

Enclosed please find the 2012 CMP Monitoring for intersection analysis.

If you have any questions or comments, please feel free to call me at (760) 947-1414.

Sincerely,

Renee Montross

Renee Montross
Sr. Office Assistant

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Russell Blewett, Mayor
Bill Holland, Mayor Pro Tem
Paul Bosacki, Council Member
Mike Leonard, Council Member
Thurston Smith, Council Member

Mike Podegracz, City Manager

9700 Seventh Ave

Hesperia, CA 92345
760-947-1000
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www.cityofhesperia.us

Hall & Foreman, Inc.
Engineering ▪ Planning ▪ Surveying

June 29, 2012 VV.120116.0300

Ms. Renee Montross
Engineering Department
City of Hesperia
9700 Seventh Street
Hesperia, CA 92345

RE: YEAR 2012 CMP MONITORING INTERSECTION ANALYSIS RESULTS HESPERIA, CALIFORNIA.

Dear Ms. Montross:

The following is a summary of the capacity analysis results for the requested CMP intersection at Bear Valley Road and "I" Avenue.

Newport Traffic Studies, a professional counting firm conducted turn movement counts at the requested intersections for two hour periods during the a.m. (7:00 to 9:00 a.m.) and p.m. (4:00 to 6:00 p.m.) peak hours on June 12, 2012. The turn movement counts were recorded in 15-minute intervals. The highest 15-minute entering volumes of the peak hour of the two hour counts, multiplied by four (4), were utilized as peak hour volumes for the analysis.

The Intersection Capacity Analysis calculations were conducted utilizing the WEBSTER (Webster Based Signal Timing Evaluation Routine, Version 2.0.9) software. The results are summarized as follows;

1. AM Peak Hour; LOS D, Delay (seconds) 41, ICU (v/c) 0.74
2. PM Peak Hour; LOS D, Delay (seconds) 43, ICU (v/c) 0.97

The Capacity Analysis worksheets are attached for your reference. Please feel free to contact us if you have any questions.

Respectfully submitted,
Hall & Foreman, Inc.

REGISTERED PROFESSIONAL ENGINEER
ROBERT A. KILPATRICK
No. 1573
[redacted]
TRAFFIC
STATE OF CALIFORNIA

Robert A. Kilpatrick, P.E., T.E.
Project Director/Associate

Attachments

WEBSTER

WEbster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

Existing - 2012 CMP Monitoring

Bear Valley Road and "I" Avenue | **City of Hesperia** | **AM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	"T"	R	"L"	T	R	"L"	T	R	L	"T"	R
Movement 1: 10 secs	X			X								
Movement 2: 2 secs				X	X	X						
Movement 3: 41 secs		X	X		X	X						
Movement 4: 24 secs						X	X	X	X			
Movement 5: 20 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3	1	2	3	S	1	1	1	S	1	1
Unadjusted Volume	64	1864	576	284	1776	20	364	364	244	20	32	32
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)						Shrd						
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	-	1.00	1.00

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

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

Output

		***		***			***				***	
Pk. Hr. Vol. (vph)	64	1864	576	284	1776	20	364	364	244	20	32	32
Saturation Flow (vph)	1700	5400	1800	3200	5400	Shrd	1700	1800	1800	Shrd	1800	1800
X or V/C	0.46	0.86	0.80	0.86	0.79	-	0.94	0.89	0.60	-	0.16	0.10
Effective green (sec)	8	39	39	10	41	-	22	22	22	-	18	18
Split Time (sec)	10	41	41	12	43	-	24	24	24	-	20	20
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	-	20	20
Delay - 15 min pk (sec/veh)	53	31	34	67	27	-	71	61	40	-	34	33
Level of Service (LOS)	D-	C-	C-	E	C	-	E	E	D+	-	C-	C-
Average 'Q' (veh/ln)	2	10	9	4	9	-	8	8	5	-	1	1
Design 'Q'- ft/ln	60	300	280	120	280	-	240	240	160	-	40	40
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	NO	YES	YES	-	YES	YES

Summary

Whole Intersection

Weighted Avg Delay (sec) = 37
Level of Service - LOS = D+

Critical Movements

Weighted Avg Delay (sec) = 41
Level of Service - LOS = D
Intersection Capacity Utilization - ICU = 0.74

Required Cycle Length is 97 sec

Min./Ped. Times Satisfied

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I AVE

EAST-WEST STREET: BEAR VALLEY

TIME: 07:00AM-08:00AM DATE: 06-21-12

NORTH LEG

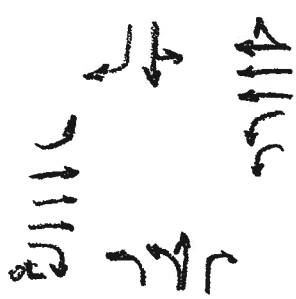
Rt	Thru	Lt	
40	57	37	Total
8	14	9	1st - 968
12	11	7	2nd - 942
11	21	10	3rd - 1015
9	11	11	4th - 1248

	1st	2nd	3rd	4th	Total
Rt	5	4	8	8	25
Thru	449	422	399	475	1745
Lt	60	44	55	50	209

HIGHEST 15MIN x 4

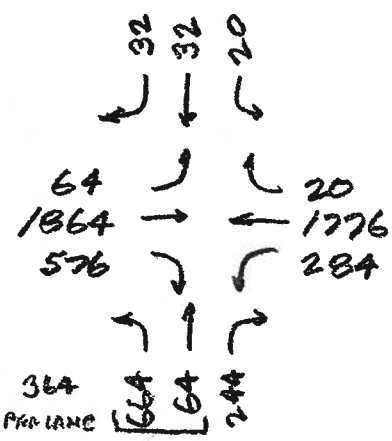
Total	1st	2nd	3rd	4th	
47	12	8	16	11	Lt
1063	233	215	249	366	Thru
385	76	77	110	122	Rt

GEOMETRICS



AAS SPLIT

	Lt	Thru	Rt
1st	79	5	18
2nd	110	6	26
3rd	101	4	31
4th	136	8	41
Total	426	23	116



Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I AVE

EAST-WEST STREET: BEAR VALLEY

TIME: 08:00AM-09:00AM DATE: 06-21-12

NORTH LEG

Rt	Thru	Lt		
58	42	42	Total	
8	8	5	1st	1410
19	11	16	2nd	1341
15	14	10	3rd	1181
16	9	11	4th	959

	1st	2nd	3rd	4th	Total
Rt	5	6	3	4	18
Thru	444	531	421	416	1812
Lt	71	71	66	51	259

Total	1st	2nd	3rd	4th	
47	16	14	8	9	Lt
1537	466	411	361	299	Thru
432	144	89	116	83	Rt

	Lt	Thru	Rt
1st	166	16	61
2nd	112	10	51
3rd	114	10	43
4th	88	8	35
Total	480	44	190

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : I AVE — VICTORVILLE

EAST-WEST STREET : BEAR VALLEY — 06-21-12

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
						NORTH LEG						
7	-2	8	0	0	0	0	1	0	1	15	1	31
10	-12	5	1	3	1	0	0	0	1	20	1	30
10	8	8	0	3	0	0	3	0	1	7	2	42
9	-1	10	0	0	0	0	0	0	0	12	1	31
7	-7	3	0	1	0	0	0	0	1	14	2	21
18	-8	15	0	3	0	0	1	0	1	15	1	46
15	-1	6	0	4	0	0	0	1	0	11	3	39
16	-6	9	0	3	0	0	0	0	0	12	2	36
92	-29	64	1	17	1	0	5	1	5	106	13	276
						SOUTH LEG						
18	-9	77	0	2	1	0	1	0	0	11	1	102
25	-9	108	0	2	1	1	0	0	0	13	1	142
31	-10	100	0	4	0	0	1	0	0	9	1	136
39	-10	132	1	3	1	1	1	0	0	14	3	185
60	6	166	0	2	0	1	1	0	0	7	0	243
49	-14	110	0	3	0	2	2	1	0	19	1	173
41	-4	110	1	3	0	0	0	0	1	11	4	167
34	-12	85	0	3	0	1	2	0	0	15	3	131
297	-62	888	2	22	3	6	8	1	1	99	14	1279
						EAST LEG						
5	447	60	0	1	0	0	1	0	0	0	0	514
3	422	43	1	0	0	0	0	0	0	0	1	470
7	398	51	1	0	0	0	0	0	0	1	4	462
8	474	45	0	0	1	0	0	1	0	1	3	533
4	443	70	0	0	1	0	0	0	1	1	0	520
6	530	67	0	0	1	0	1	0	0	0	3	608
3	420	58	0	0	1	0	1	1	0	0	6	490
4	416	42	0	0	0	0	0	1	0	0	8	471
40	3550	436	2	1	4	0	3	3	1	3	25	4068
						WEST LEG						
76	230	12	0	2	0	0	0	0	0	1	0	321
74	210	8	0	3	0	0	1	0	3	1	0	300
109	247	16	1	2	0	0	0	0	0	0	0	375
119	366	11	2	0	0	0	0	0	1	0	0	499
140	464	16	2	1	0	0	1	0	2	0	0	626
88	408	14	0	2	0	0	0	0	1	1	0	514
115	359	7	0	2	0	0	0	1	1	0	0	485
81	297	9	0	2	0	0	0	0	2	0	0	391
802	2581	93	5	14	0	0	2	1	10	3	0	3511

Prepared by Newport Traffic Studies

WEBSTER

WEbster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

Existing - 2012 CMP Monitoring

Bear Valley Road and "I" Avenue **City of Hesperia** **PM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 6 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 43 secs		X	X		X	X						
Movement 4: 35 secs						X	X	X	X			
Movement 5: 4 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3	1	2	3	S	1	1	1	S	1	1
Unadjusted Volume	140	2440	664	132	1664	20	620	620	444	20	16	20
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)						Shrd				Shrd		
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	-	1.00	1.00

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

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

Output

		***		***			***				***	
Pk. Hr. Vol. (vph)	140	2440	664	132	1664	20	620	620	444	20	16	20
Saturation Flow (vph)	1700	5400	1800	3200	5400	Shrd	1700	1800	1800	Shrd	1800	1800
X or V/C	1.81	0.97	0.79	0.91	0.67	-	0.97	0.92	0.66	-	0.88	0.49
Effective green (sec)	4	41	41	4	41	-	33	33	33	-	2	2
Split Time (sec)	6	43	43	6	43	-	35	35	35	-	4	4
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	-	20	20
Delay - 15 min pk (sec/veh)	453	35	27	95	20	-	57	46	28	-	151	79
Level of Service (LOS)	F	D+	C	F	B	-	E+	D	C	-	F	E-
Average 'Q' (veh/ln)	7	11	9	2	7	-	11	10	7	-	1	1
Design 'Q'- ft/ln	220	340	280	60	220	-	340	300	220	-	40	40
Do Vehicles Clear?	NO	NO	YES	NO	YES	-	NO	YES	YES	-	NO	YES

Summary

Intersection Unstable-Consider Mitigation

Whole Intersection

Weighted Avg Delay (sec) = 43
Level of Service - LOS = D

Critical Movements

Weighted Avg Delay (sec) = 43
Level of Service - LOS = D
Intersection Capacity Utilization - ICU = 0.97

Cycle Length for min. delay is 88 sec

Unconstrained Analysis - Min./Ped. Times May Not Be Satisfied

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I AVE

EAST-WEST STREET: BEAR VALLEY

TIME: 04:00PM-05:00PM DATE: 06-21-12

NORTH LEG

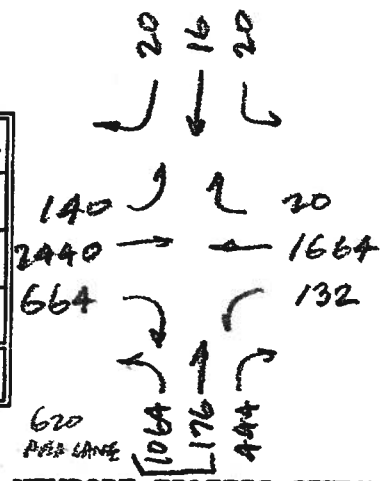
Rt	Thru	Lt	
29	36	42	Total
8	16	16	1st – 1525
6	10	9	2nd – 1358
6	6	8	3rd – 1414
9	4	9	4th – 1454

	1st	2nd	3rd	4th	Total
Rt	11	5	6	5	27
Thru	492	391	366	399	1648
Lt	49	59	36	38	182

HIGHEST 15MIN x 4

Total	1st	2nd	3rd	4th	
94	24	24	20	26	Lt
2208	510	499	584	615	Thru
528	123	143	138	124	Rt

	Lt	Thru	Rt
1st	144	21	111
2nd	114	22	76
3rd	129	19	96
4th	133	20	72
Total	520	82	355



Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I AVE

EAST-WEST STREET: BEAR VALLEY

TIME: 05:00PM-06:00PM DATE: 06-21-12

NORTH LEG

Rt	Thru	Lt	
55	27	40	Total
5	4	5	1st – 1700 *
19	3	9	2nd – 1587
16	10	15	3rd – 1494
15	10	11	4th – 1325

	1st	2nd	3rd	4th	Total
Rt	5	5	7	6	23
Thru	416	429	422	328	1595
Lt	33	35	76	62	206

Total	1st	2nd	3rd	4th	
109	35	22	29	23	Lt
2414	610	622	596	586	Thru
545	166	142	126	111	Rt

	Lt	Thru	Rt
1st	266	44	111
2nd	136	21	94
3rd	108	16	73
4th	110	8	55
Total	620	89	333

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : I AVE — VICTORVILLE

EAST-WEST STREET : BEAR VALLEY — 06-21-12

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
						NORTH LEG						
8	-4	16	0	5	0	0	1	0	0	14	0	40
6	-8	7	0	6	2	0	0	0	0	12	0	25
6	-13	8	0	1	0	0	2	0	0	16	0	20
9	-19	9	0	2	0	0	1	0	0	20	0	22
5	-15	5	0	3	0	0	0	0	0	16	0	14
19	-20	9	0	5	0	0	0	0	0	18	0	31
16	-4	14	0	3	1	0	0	0	0	11	0	41
14	-5	11	1	5	0	0	0	0	0	10	0	36
83	-88	79	1	30	3	0	4	0	0	117	0	229
						SOUTH LEG						
111	2	144	0	4	0	0	0	0	0	15	0	276
76	-1	112	0	4	1	0	1	1	0	18	0	212
96	3	129	0	1	0	0	1	0	0	14	0	244
72	3	133	0	5	0	0	0	0	0	12	0	225
111	25	266	0	1	0	0	1	0	0	17	0	421
94	-2	135	0	4	1	0	0	0	0	19	0	251
73	2	108	0	3	0	0	0	0	0	11	0	197
55	-10	110	0	2	0	0	0	0	0	16	0	173
688	221	137	0	24	2	0	3	1	0	122	0	1999
						EAST LEG						
11	492	49	0	0	0	0	0	0	0	0	0	552
5	391	59	0	0	0	0	0	0	0	0	0	455
6	366	36	0	0	0	0	0	0	0	0	0	408
5	399	38	0	0	0	0	0	0	0	0	0	442
4	416	33	0	0	0	0	0	0	1	0	0	454
5	429	35	0	0	0	0	0	0	0	0	0	469
7	422	76	0	0	0	0	0	0	0	0	0	505
6	328	62	0	0	0	0	0	0	0	0	0	396
49	3243	388	0	0	0	0	0	0	1	0	0	3681
						WEST LEG						
123	510	24	0	0	0	0	0	0	0	0	0	657
142	499	24	1	0	0	0	0	0	0	0	0	666
138	584	20	0	0	0	0	0	0	0	0	0	742
123	615	26	0	0	0	0	0	0	1	0	0	765
166	610	34	0	0	1	0	0	0	0	0	0	811
142	622	22	0	0	0	0	0	0	0	0	0	786
125	596	28	1	0	0	0	0	0	0	0	1	751
111	586	22	0	0	0	0	0	0	0	0	1	720
1070	4622	200	2	0	1	0	0	0	1	0	2	5898

Prepared by Newport Traffic Studies