

**PUBLIC WORKS DEPARTMENT**

300 North "D" Street • San Bernardino • CA 92418-0001

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**JUL 27 2011**

**SAN BERNARDINO  
ASSOCIATED GOVTS**

July 25, 2011

Mr. Steve Smith  
Chief of Planning  
San Bernardino Associated Governments  
1170 W. 3<sup>rd</sup> Street, 2<sup>nd</sup> Floor  
San Bernardino, CA. 92410-1715

**Re: Year 2011 CMP Analysis**

Dear Mr. Smith:

As requested, please find enclosed the analysis of the CMP locations for monitoring Year 2011. There were eleven (11) intersection locations that met the analysis criteria for our jurisdiction.

Please do not hesitate to contact me at (909) 384-5253 for additional information or data inquiries.

Sincerely,

Manas Bista, P.E.  
Traffic Operations and Systems Analyst

Attachments: AM/PM CMP Documents

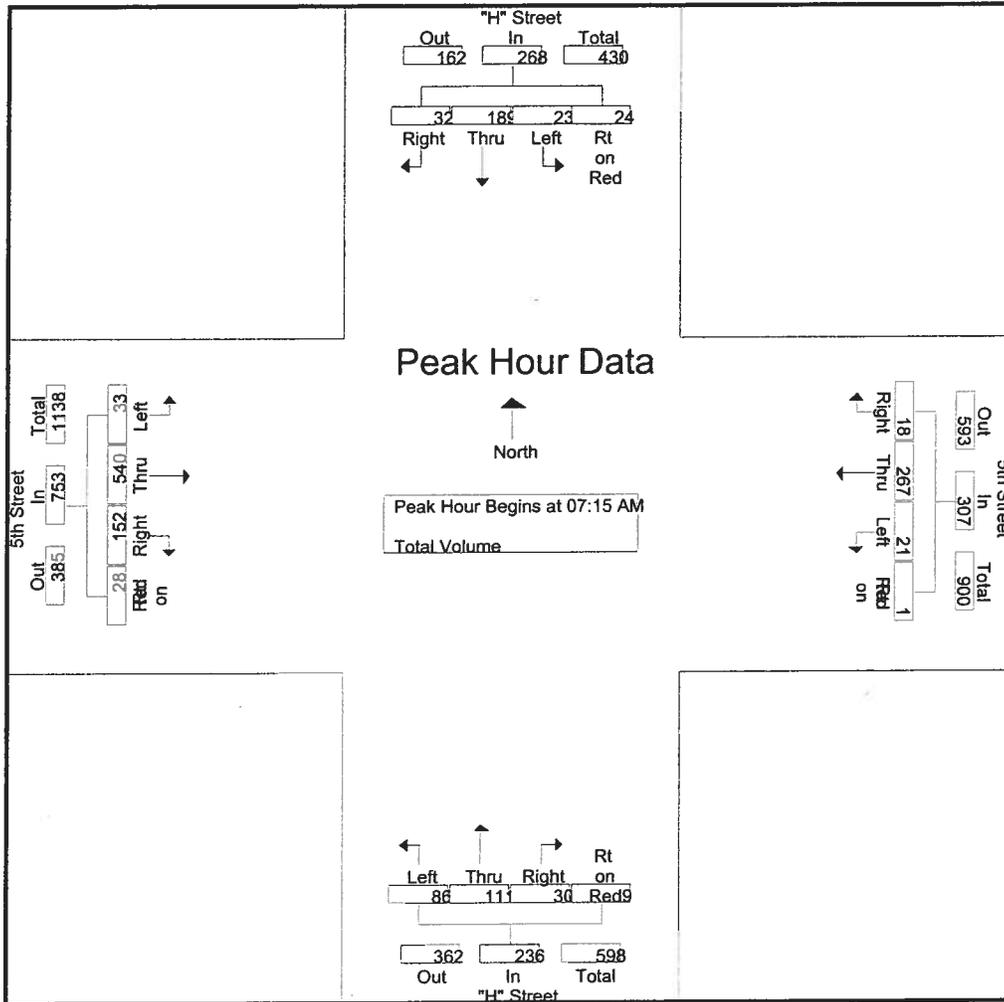
City of San Bernardino  
 N/S: "H" Street  
 E/W: 5th Street  
 Weather: Sunny

File Name : SBCH5AM  
 Site Code : 11115097  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	"H" Street Southbound					5th Street Westbound					"H" Street Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
07:00 AM	5	27	5	6	43	2	46	2	0	50	14	25	2	7	48	2	73	26	5	106	247
07:15 AM	3	39	7	5	54	2	53	5	0	60	19	31	5	2	57	4	139	42	7	192	363
07:30 AM	9	52	10	8	79	7	72	1	0	80	18	27	9	2	56	7	135	38	6	186	401
07:45 AM	1	56	6	5	68	7	77	8	0	92	19	29	8	2	58	14	153	39	10	216	434
Total	18	174	28	24	244	18	248	16	0	282	70	112	24	13	219	27	500	145	28	700	1445
08:00 AM	10	42	9	6	67	5	65	4	1	75	30	24	8	3	65	8	113	33	5	159	366
08:15 AM	6	32	10	6	54	6	47	1	1	55	18	36	6	1	61	6	104	26	6	142	312
08:30 AM	7	30	8	15	60	8	77	4	2	91	22	35	9	1	67	11	97	41	10	159	377
08:45 AM	8	40	12	8	68	9	77	6	2	94	27	27	11	2	67	8	113	41	4	166	395
Total	31	144	39	35	249	28	266	15	6	315	97	122	34	7	260	33	427	141	25	626	1450
Grand Total	49	318	67	59	493	46	514	31	6	597	167	234	58	20	479	60	927	286	53	1326	2895
Approch %	9.9	64.5	13.6	12		7.7	86.1	5.2	1		34.9	48.9	12.1	4.2		4.5	69.9	21.6	4		
Total %	1.7	11	2.3	2	17	1.6	17.8	1.1	0.2	20.6	5.8	8.1	2	0.7	16.5	2.1	32	9.9	1.8	45.8	

Start Time	"H" Street Southbound					5th Street Westbound					"H" Street Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	39	7	5	54	2	53	5	0	60	19	31	5	2	57	4	139	42	7	192	363
07:30 AM	9	52	10	8	79	7	72	1	0	80	18	27	9	2	56	7	135	38	6	186	401
07:45 AM	1	56	6	5	68	7	77	8	0	92	19	29	8	2	58	14	153	39	10	216	434
08:00 AM	10	42	9	6	67	5	65	4	1	75	30	24	8	3	65	8	113	33	5	159	366
Total Volume	23	189	32	24	268	21	267	18	1	307	86	111	30	9	236	33	540	152	28	753	1564
% App. Total	8.6	70.5	11.9	9		6.8	87	5.9	0.3		36.4	47	12.7	3.8		4.4	71.7	20.2	3.7		
PHF	.575	.844	.800	.750	.848	.750	.867	.563	.250	.834	.717	.895	.833	.750	.908	.589	.882	.905	.700	.872	.901



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

	07:15 AM					08:00 AM					08:00 AM					07:15 AM				
+0 mins.	3	39	7	5	54	5	65	4	1	75	30	24	8	3	65	4	139	42	7	192
+15 mins.	9	52	10	8	79	6	47	1	1	55	18	36	6	1	61	7	135	38	6	186
+30 mins.	1	56	6	5	68	8	77	4	2	91	22	35	9	1	67	14	153	39	10	216
+45 mins.	10	42	9	6	67	9	77	6	2	94	27	27	11	2	67	8	113	33	5	159
Total Volume	23	189	32	24	268	28	266	15	6	315	97	122	34	7	260	33	540	152	28	753
% App. Total	8.6	70.5	11.9	9		8.9	84.4	4.8	1.9		37.3	46.9	13.1	2.7		4.4	71.7	20.2	3.7	
PHF	.575	.844	.800	.750	.848	.778	.864	.625	.750	.838	.808	.847	.773	.583	.970	.589	.882	.905	.700	.872

Lanes, Volumes, Timings  
3: 5th Street & H Street

07/21/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	540	180	21	267	19	86	111	39	23	189	56
Satd. Flow (prot)	1770	3539	1583	1770	3504	0	1770	3401	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.592			0.649		
Satd. Flow (perm)	1770	3539	1583	1770	3504	0	1103	3401	0	1209	3539	1583
Satd. Flow (RTOR)			196		6			42				61
Lane Group Flow (vph)	36	587	196	23	311	0	93	163	0	25	205	61
Turn Type	Prot		Perm	Prot			pm+pt			pm+pt		Over
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4				2			6		
Total Split (s)	23.0	32.0	32.0	11.0	20.0	0.0	10.0	41.0	0.0	16.0	47.0	23.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	7.6	24.1	24.1	6.4	18.8		61.8	59.2		59.9	54.9	7.6
Actuated g/C Ratio	0.08	0.24	0.24	0.06	0.19		0.62	0.59		0.60	0.55	0.08
v/c Ratio	0.27	0.69	0.37	0.20	0.47		0.13	0.08		0.03	0.11	0.35
Control Delay	48.0	38.7	6.3	48.4	37.1		9.8	9.7		9.9	13.7	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	48.0	38.7	6.3	48.4	37.1		9.8	9.7		9.9	13.7	17.1
LOS	D	D	A	D	D		A	A		A	B	B
Approach Delay		31.3			37.9			9.7			14.1	
Approach LOS		C			D			A			B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 26.4  
 Intersection Capacity Utilization 41.6%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service A

Splits and Phases: 3: 5th Street & H Street

ø1	ø2	ø3	ø4
16 s	41 s	11 s	32 s
ø5	ø6	ø7	ø8
10 s	47 s	23 s	20 s

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

City of San Bernardino  
 N/S: "H" Street  
 E/W: 5th Street  
 Weather: Sunny

File Name : SBCH5PM  
 Site Code : 11115097  
 Start Date : 5/4/2011  
 Page No : 1

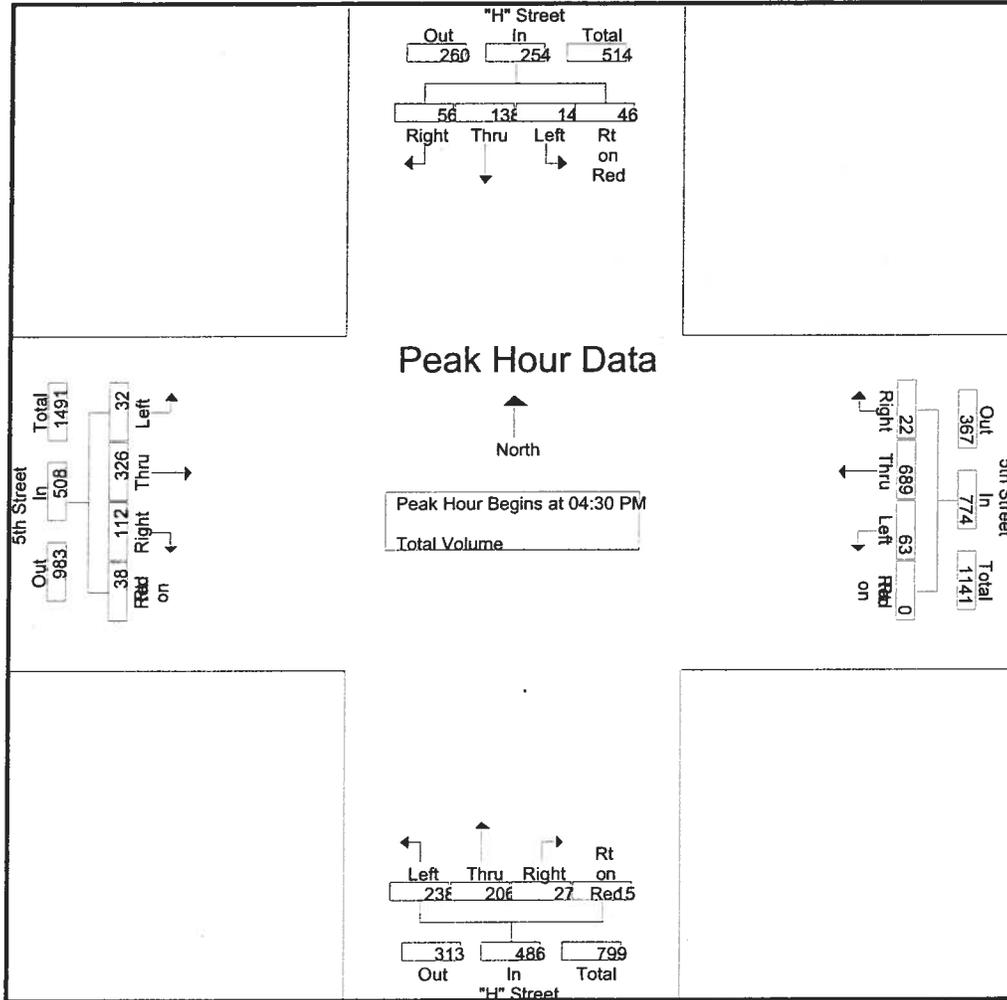
Groups Printed- Total Volume

Start Time	"H" Street Southbound					5th Street Westbound					"H" Street Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
04:00 PM	2	41	11	15	69	15	167	6	2	190	53	60	8	0	121	10	117	36	7	170	550
04:15 PM	5	29	14	18	66	13	153	4	0	170	42	46	5	3	96	10	94	34	6	144	476
04:30 PM	4	36	15	10	65	15	172	10	0	197	59	37	7	3	106	4	93	27	5	129	497
04:45 PM	5	37	14	13	69	15	129	1	0	145	48	60	9	4	121	9	72	21	11	113	448
Total	16	143	54	56	269	58	621	21	2	702	202	203	29	10	444	33	376	118	29	556	1971
05:00 PM	1	34	14	9	58	18	212	7	0	237	63	50	8	3	124	9	78	40	13	140	559
05:15 PM	4	31	13	14	62	15	176	4	0	195	68	59	3	5	135	10	83	24	9	126	518
05:30 PM	1	28	8	12	49	14	133	4	1	152	47	49	4	2	102	10	93	29	7	139	442
05:45 PM	3	27	5	11	46	3	101	7	1	112	49	35	2	2	88	6	95	27	5	133	379
Total	9	120	40	46	215	50	622	22	2	696	227	193	17	12	449	35	349	120	34	538	1898
Grand Total	25	263	94	102	484	108	1243	43	4	1398	429	396	46	22	893	68	725	238	63	1094	3869
Apprch %	5.2	54.3	19.4	21.1		7.7	88.9	3.1	0.3		48	44.3	5.2	2.5		6.2	66.3	21.8	5.8		
Total %	0.6	6.8	2.4	2.6	12.5	2.8	32.1	1.1	0.1	36.1	11.1	10.2	1.2	0.6	23.1	1.8	18.7	6.2	1.6	28.3	

Start Time	"H" Street Southbound					5th Street Westbound					"H" Street Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. 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	4	36	15	10	65	15	172	10	0	197	59	37	7	3	106	4	93	27	5	129	497
04:45 PM	5	37	14	13	69	15	129	1	0	145	48	60	9	4	121	9	72	21	11	113	448
05:00 PM	1	34	14	9	58	18	212	7	0	237	63	50	8	3	124	9	78	40	13	140	559
05:15 PM	4	31	13	14	62	15	176	4	0	195	68	59	3	5	135	10	83	24	9	126	518
Total Volume	14	138	56	46	254	63	689	22	0	774	238	206	27	15	486	32	326	112	38	508	2022
% App. Total	5.5	54.3	22	18.1		8.1	89	2.8	0		49	42.4	5.6	3.1		6.3	64.2	22	7.5		
PHF	.700	.932	.933	.821	.920	.875	.813	.550	.000	.816	.875	.858	.750	.750	.900	.800	.876	.700	.731	.907	.904

City of San Bernardino  
 N/S: "H" Street  
 E/W: 5th Street  
 Weather: Sunny

File Name : SBCH5PM  
 Site Code : 11115097  
 Start Date : 5/4/2011  
 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					04:30 PM					04:30 PM					04:00 PM				
+0 mins.	2	41	11	15	69	15	172	10	0	197	59	37	7	3	106	10	117	36	7	170
+15 mins.	5	29	14	18	66	15	129	1	0	145	48	60	9	4	121	10	94	34	6	144
+30 mins.	4	36	15	10	65	18	212	7	0	237	63	50	8	3	124	4	93	27	5	129
+45 mins.	5	37	14	13	69	15	176	4	0	195	68	59	3	5	135	9	72	21	11	113
Total Volume	16	143	54	56	269	63	689	22	0	774	238	206	27	15	486	33	376	118	29	556
% App. Total	5.9	53.2	20.1	20.8		8.1	89	2.8	0		49	42.4	5.6	3.1		5.9	67.6	21.2	5.2	
PHF	.800	.872	.900	.778	.975	.875	.813	.550	.000	.816	.875	.858	.750	.750	.900	.825	.803	.819	.659	.818

Lanes, Volumes, Timings  
3: 5th Street & H Street

07/21/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	326	150	63	689	22	238	206	42	14	138	102
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1770	3447	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.608			0.585		
Satd. Flow (perm)	1770	3539	1583	1770	3522	0	1133	3447	0	1090	3539	1583
Satd. Flow (RTOR)			163		3			27				111
Lane Group Flow (vph)	35	354	163	68	773	0	259	270	0	15	150	111
Turn Type	Prot		Perm	Prot			pm+pt			pm+pt		Over
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4				2			6		
Total Split (s)	23.0	32.0	32.0	11.0	20.0	0.0	10.0	41.0	0.0	16.0	47.0	23.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	7.7	30.2	30.2	6.8	27.3		51.2	48.8		49.0	43.0	7.7
Actuated g/C Ratio	0.08	0.30	0.30	0.07	0.27		0.51	0.49		0.49	0.43	0.08
v/c Ratio	0.26	0.33	0.28	0.57	0.80		0.42	0.16		0.03	0.10	0.50
Control Delay	47.2	29.0	5.8	64.0	41.8		16.5	14.0		11.4	17.2	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	47.2	29.0	5.8	64.0	41.8		16.5	14.0		11.4	17.2	16.3
LOS	D	C	A	E	D		B	B		B	B	B
Approach Delay		23.3			43.6			15.2			16.5	
Approach LOS		C			D			B			B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 28.3  
 Intersection Capacity Utilization 53.4%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service A

Splits and Phases: 3: 5th Street & H Street

ø1	ø2	ø3	ø4
15 s	41 s	11 s	32 s
ø5	ø6	ø7	ø8
10 s	47 s	23 s	20 s

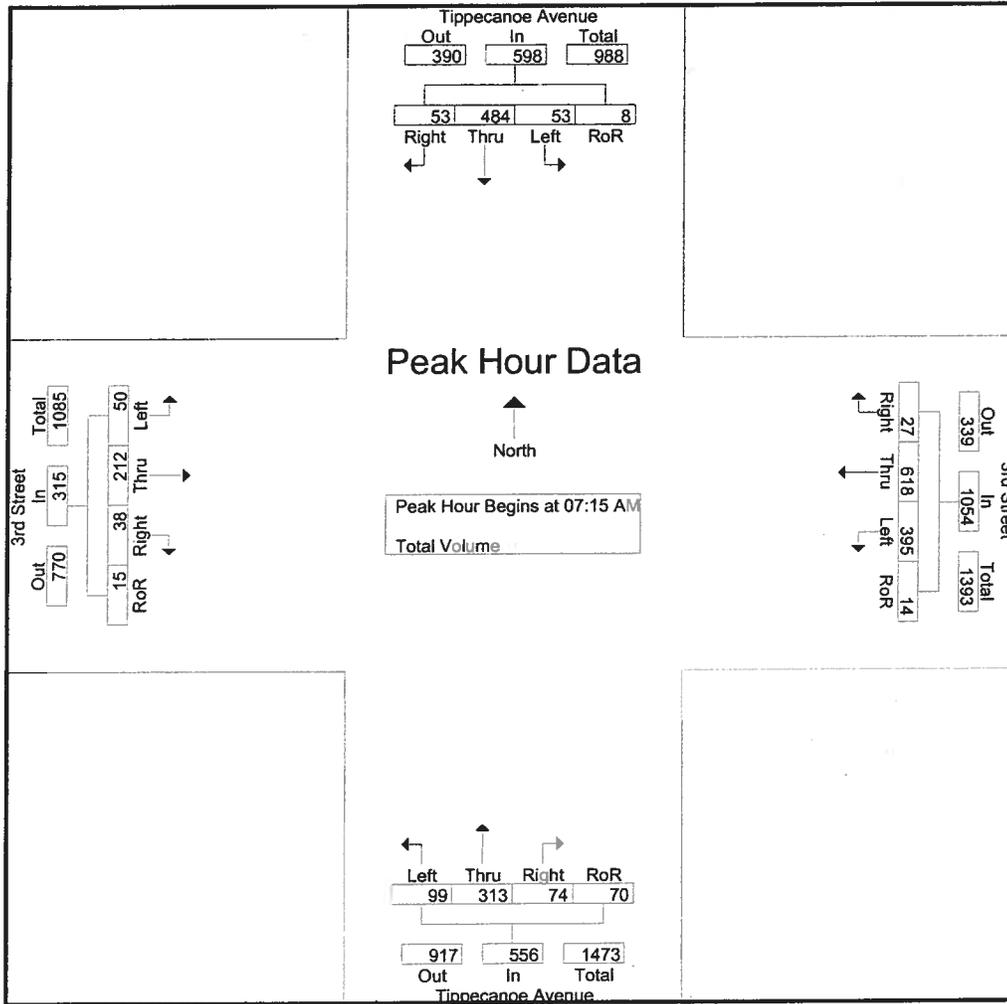
City of San Bernardino  
 N/S: Tippecanoe Avenue  
 E/W: 3rd Street  
 Weather: Sunny

File Name : SBCTE3AM  
 Site Code : 11115095  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Tippecanoe Avenue Southbound					3rd Street Westbound					Tippecanoe Avenue Northbound					3rd Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
07:00 AM	12	67	14	7	100	35	107	6	4	152	31	59	15	10	115	5	43	20	5	73	440
07:15 AM	22	95	12	1	130	109	192	9	3	313	32	74	18	25	149	26	51	11	5	93	685
07:30 AM	10	131	21	1	163	106	163	6	4	279	28	72	9	13	122	10	66	11	3	90	654
07:45 AM	14	166	10	3	193	93	168	9	1	271	20	88	22	18	148	6	46	8	4	64	676
<b>Total</b>	<b>58</b>	<b>459</b>	<b>57</b>	<b>12</b>	<b>586</b>	<b>343</b>	<b>630</b>	<b>30</b>	<b>12</b>	<b>1015</b>	<b>111</b>	<b>293</b>	<b>64</b>	<b>66</b>	<b>534</b>	<b>47</b>	<b>206</b>	<b>50</b>	<b>17</b>	<b>320</b>	<b>2455</b>
08:00 AM	7	92	10	3	112	87	95	3	6	191	19	79	25	14	137	8	49	8	3	68	508
08:15 AM	7	84	6	4	101	78	96	3	4	181	14	57	40	12	123	13	52	17	2	84	489
08:30 AM	3	111	9	3	126	59	72	3	3	137	19	85	28	22	154	10	45	12	3	70	487
08:45 AM	5	88	6	1	100	77	94	2	2	175	21	67	17	17	122	26	63	14	1	104	501
<b>Total</b>	<b>22</b>	<b>375</b>	<b>31</b>	<b>11</b>	<b>439</b>	<b>301</b>	<b>357</b>	<b>11</b>	<b>15</b>	<b>684</b>	<b>73</b>	<b>288</b>	<b>110</b>	<b>65</b>	<b>536</b>	<b>57</b>	<b>209</b>	<b>51</b>	<b>9</b>	<b>326</b>	<b>1985</b>
<b>Grand Total</b>	<b>80</b>	<b>834</b>	<b>88</b>	<b>23</b>	<b>1025</b>	<b>644</b>	<b>987</b>	<b>41</b>	<b>27</b>	<b>1699</b>	<b>184</b>	<b>581</b>	<b>174</b>	<b>131</b>	<b>1070</b>	<b>104</b>	<b>415</b>	<b>101</b>	<b>26</b>	<b>646</b>	<b>4440</b>
Apprch %	7.8	81.4	8.6	2.2		37.9	58.1	2.4	1.6		17.2	54.3	16.3	12.2		16.1	64.2	15.6	4		
Total %	1.8	18.8	2	0.5	23.1	14.5	22.2	0.9	0.6	38.3	4.1	13.1	3.9	3	24.1	2.3	9.3	2.3	0.6	14.5	

Start Time	Tippecanoe Avenue Southbound					3rd Street Westbound					Tippecanoe Avenue Northbound					3rd Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	22	95	12	1	130	109	192	9	3	313	32	74	18	25	149	26	51	11	5	93	685
07:30 AM	10	131	21	1	163	106	163	6	4	279	28	72	9	13	122	10	66	11	3	90	654
07:45 AM	14	166	10	3	193	93	168	9	1	271	20	88	22	18	148	6	46	8	4	64	676
08:00 AM	7	92	10	3	112	87	95	3	6	191	19	79	25	14	137	8	49	8	3	68	508
Total Volume	53	484	53	8	598	395	618	27	14	1054	99	313	74	70	556	50	212	38	15	315	2523
% App. Total	8.9	80.9	8.9	1.3		37.5	58.6	2.6	1.3		17.8	56.3	13.3	12.6		15.9	67.3	12.1	4.8		
PHF	.602	.729	.631	.667	.775	.906	.805	.750	.583	.842	.773	.889	.740	.700	.933	.481	.803	.864	.750	.847	.921



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM					07:45 AM					08:00 AM									
+0 mins.	22	95	12	1	130	109	192	9	3	313	20	88	22	18	148	8	49	8	3	68
+15 mins.	10	131	21	1	163	106	163	6	4	279	19	79	25	14	137	13	52	17	2	84
+30 mins.	14	166	10	3	193	93	168	9	1	271	14	57	40	12	123	10	45	12	3	70
+45 mins.	7	92	10	3	112	87	95	3	6	191	19	85	28	22	154	26	63	14	1	104
Total Volume	53	484	53	8	598	395	618	27	14	1054	72	309	115	66	562	57	209	51	9	326
% App. Total	8.9	80.9	8.9	1.3		37.5	58.6	2.6	1.3		12.8	55	20.5	11.7		17.5	64.1	15.6	2.8	
PHF	.602	.729	.631	.667	.775	.906	.805	.750	.583	.842	.900	.878	.719	.750	.912	.548	.829	.750	.750	.784

Lanes, Volumes, Timings  
3: 3rd Street & Tippecanoe Ave AM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	212	53	395	618	41	99	313	144	53	484	61
Satd. Flow (prot)	1770	3433	0	3433	3539	1583	1770	3539	1583	1770	3479	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3433	0	3433	3539	1583	1770	3539	1583	1770	3479	0
Satd. Flow (RTOR)		30				38			157		15	
Lane Group Flow (vph)	54	288	0	429	672	45	108	340	157	58	592	0
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Total Split (s)	11.0	20.0	0.0	23.0	32.0	32.0	16.0	36.0	23.0	11.0	31.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	6.7	13.5		16.0	24.8	24.8	10.2	39.1	59.1	7.3	36.4	
Actuated g/C Ratio	0.07	0.15		0.18	0.28	0.28	0.11	0.43	0.66	0.08	0.40	
v/c Ratio	0.41	0.53		0.70	0.69	0.10	0.54	0.22	0.14	0.41	0.42	
Control Delay	49.4	34.8		41.0	33.1	9.8	47.4	18.5	1.6	48.0	22.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	49.4	34.8		41.0	33.1	9.8	47.4	18.5	1.6	48.0	22.4	
LOS	D	C		D	C	A	D	B	A	D	C	
Approach Delay		37.1			35.2			19.3			24.7	
Approach LOS		D			D			B			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 29.4

Intersection Capacity Utilization 54.6%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service A

Splits and Phases: 3: 3rd Street & Tippecanoe Ave

ø1	ø2	ø3	ø4
11 s	36 s	23 s	20 s
ø5	ø6	ø7	ø8
16 s	31 s	11 s	32 s

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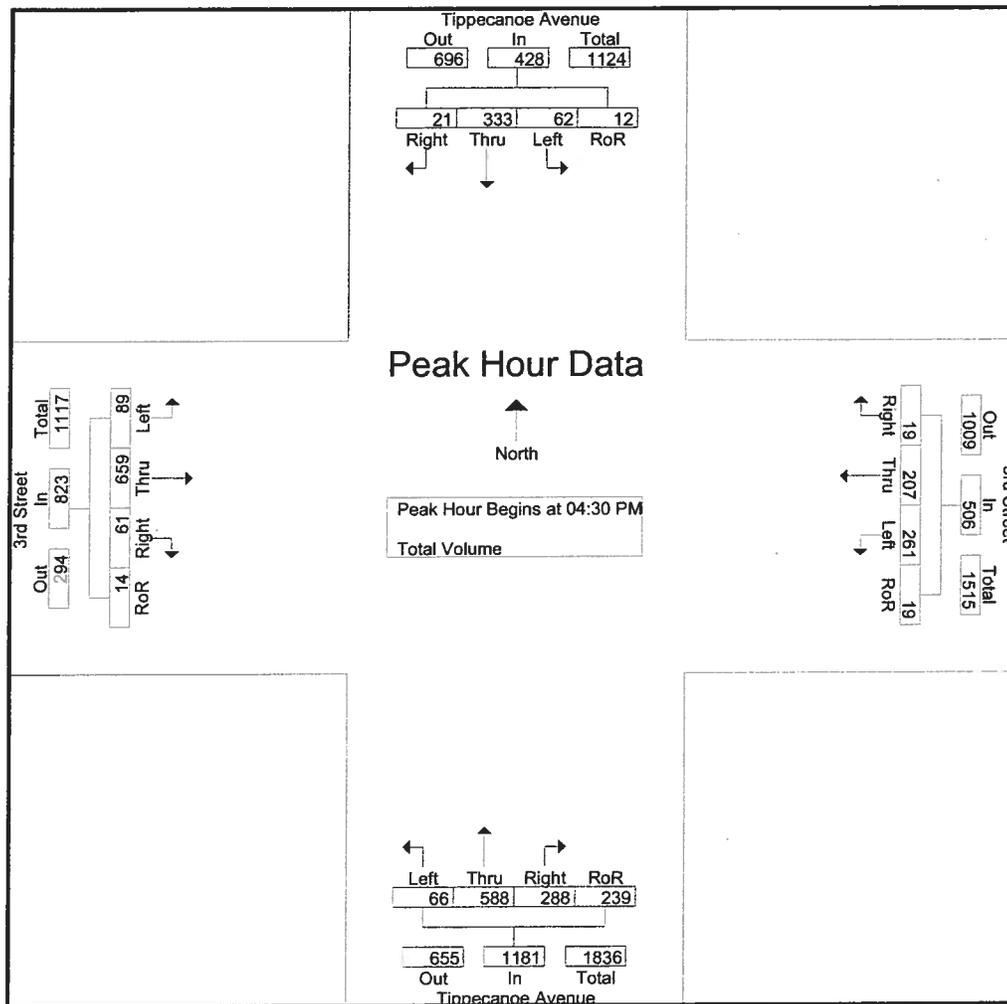
City of San Bernardino  
 N/S: Tippecanoe Avenue  
 E/W: 3rd Street  
 Weather: Sunny

File Name : SBCT13PM  
 Site Code : 11115095  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Tippecanoe Avenue Southbound					3rd Street Westbound					Tippecanoe Avenue Northbound					3rd Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
04:00 PM	7	72	10	2	91	64	57	3	0	124	18	129	45	25	217	19	102	14	4	139	571
04:15 PM	8	90	6	0	104	54	45	6	2	107	15	133	51	28	227	9	89	8	1	107	545
04:30 PM	18	90	5	3	116	72	41	4	9	126	18	119	65	60	262	29	196	14	1	240	744
04:45 PM	11	88	6	7	112	54	53	6	5	118	9	153	72	57	291	26	142	15	5	188	709
Total	44	340	27	12	423	244	196	19	16	475	60	534	233	170	997	83	529	51	11	674	2569
05:00 PM	15	68	7	1	91	64	56	6	2	128	17	157	88	48	310	23	186	15	3	227	756
05:15 PM	18	87	3	1	109	71	57	3	3	134	22	159	63	74	318	11	135	17	5	168	729
05:30 PM	7	90	7	1	105	58	49	1	1	109	7	127	77	70	281	14	135	13	11	173	668
05:45 PM	4	67	2	1	74	53	34	10	1	98	7	110	72	41	230	8	82	8	1	99	501
Total	44	312	19	4	379	246	196	20	7	469	53	553	300	233	1139	56	538	53	20	667	2654
Grand Total	88	652	46	16	802	490	392	39	23	944	113	1087	533	403	2136	139	1067	104	31	1341	5223
Apprch %	11	81.3	5.7	2		51.9	41.5	4.1	2.4		5.3	50.9	25	18.9		10.4	79.6	7.8	2.3		
Total %	1.7	12.5	0.9	0.3	15.4	9.4	7.5	0.7	0.4	18.1	2.2	20.8	10.2	7.7	40.9	2.7	20.4	2	0.6	25.7	

Start Time	Tippecanoe Avenue Southbound					3rd Street Westbound					Tippecanoe Avenue Northbound					3rd Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. 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	18	90	5	3	116	72	41	4	9	126	18	119	65	60	262	29	196	14	1	240	744
04:45 PM	11	88	6	7	112	54	53	6	5	118	9	153	72	57	291	26	142	15	5	188	709
05:00 PM	15	68	7	1	91	64	56	6	2	128	17	157	88	48	310	23	186	15	3	227	756
05:15 PM	18	87	3	1	109	71	57	3	3	134	22	159	63	74	318	11	135	17	5	168	729
Total Volume	62	333	21	12	428	261	207	19	19	506	66	588	288	239	1181	89	659	61	14	823	2938
% App. Total	14.5	77.8	4.9	2.8		51.6	40.9	3.8	3.8		5.6	49.8	24.4	20.2		10.8	80.1	7.4	1.7		
PHF	.861	.925	.750	.429	.922	.906	.908	.792	.528	.944	.750	.925	.818	.807	.928	.767	.841	.897	.700	.857	.972



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					04:45 PM					04:30 PM									
+0 mins.	18	90	5	3	116	72	41	4	9	126	9	153	72	57	291	29	196	14	1	240
+15 mins.	11	88	6	7	112	54	53	6	5	118	17	157	88	48	310	26	142	15	5	188
+30 mins.	15	68	7	1	91	64	56	6	2	128	22	159	63	74	318	23	186	15	3	227
+45 mins.	18	87	3	1	109	71	57	3	3	134	7	127	77	70	281	11	135	17	5	168
Total Volume	62	333	21	12	428	261	207	19	19	506	55	596	300	249	1200	89	659	61	14	823
% App. Total	14.5	77.8	4.9	2.8		51.6	40.9	3.8	3.8		4.6	49.7	25	20.8		10.8	80.1	7.4	1.7	
PHF	.861	.925	.750	.429	.922	.906	.908	.792	.528	.944	.625	.937	.852	.841	.943	.767	.841	.897	.700	.857

Lanes, Volumes, Timings

3: 3rd Street & Tippecanoe Ave PM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	659	75	261	207	38	66	588	527	62	333	33
Satd. Flow (prot)	1770	3486	0	3433	3539	1583	1770	3539	1583	1770	3490	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3486	0	3433	3539	1583	1770	3539	1583	1770	3490	0
Satd. Flow (RTOR)		13				41			105		11	
Lane Group Flow (vph)	97	798	0	284	225	41	72	639	573	67	398	0
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Total Split (s)	14.0	29.0	0.0	23.0	38.0	38.0	13.0	27.0	23.0	11.0	25.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	9.0	25.1		14.0	32.3	32.3	8.0	29.6	47.6	7.1	28.7	
Actuated g/C Ratio	0.10	0.28		0.16	0.36	0.36	0.09	0.33	0.53	0.08	0.32	
v/c Ratio	0.55	0.81		0.53	0.18	0.07	0.46	0.55	0.65	0.48	0.36	
Control Delay	50.3	37.3		38.0	20.1	6.3	48.1	29.1	17.4	51.3	26.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.3	37.3		38.0	20.1	6.3	48.1	29.1	17.4	51.3	26.6	
LOS	D	D		D	C	A	D	C	B	D	C	
Approach Delay		38.7			28.3			25.0			30.1	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 30.1

Intersection Capacity Utilization 66.7%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 3: 3rd Street & Tippecanoe Ave

11 s	27 s	23 s	29 s
13 s	25 s	14 s	38 s

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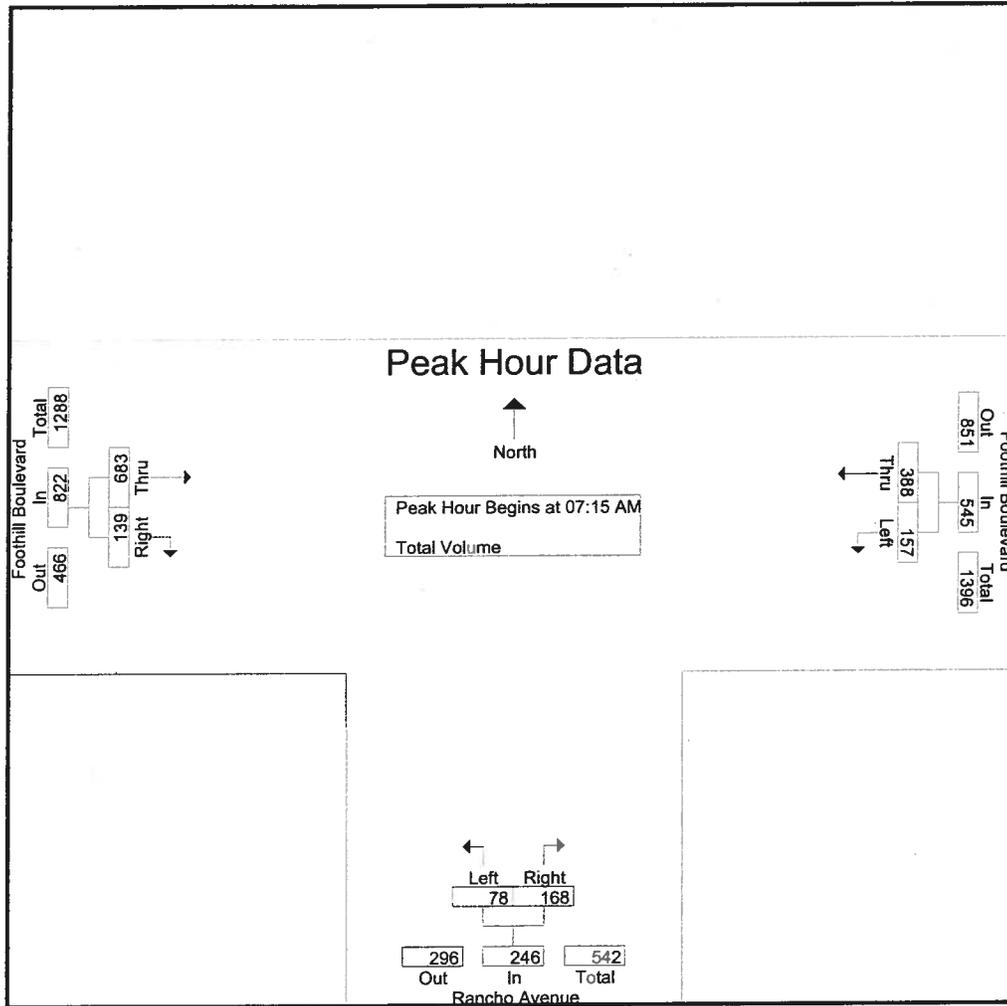
City of San Bernardino  
 N/S: Rancho Avenue  
 E/W: Foothill Boulevard  
 Weather: Sunny

File Name : SBCRAFOAM  
 Site Code : 11115097  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Foothill Boulevard Westbound			Rancho Avenue Northbound			Foothill Boulevard Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	32	68	100	10	35	45	97	25	122	267
07:15 AM	40	90	130	16	42	58	153	37	190	378
07:30 AM	40	100	140	19	41	60	198	40	238	438
07:45 AM	40	91	131	27	52	79	174	30	204	414
Total	152	349	501	72	170	242	622	132	754	1497
08:00 AM	37	107	144	16	33	49	158	32	190	383
08:15 AM	24	64	88	13	36	49	133	17	150	287
08:30 AM	25	95	120	17	29	46	135	22	157	323
08:45 AM	20	108	128	12	22	34	118	25	143	305
Total	106	374	480	58	120	178	544	96	640	1298
Grand Total	258	723	981	130	290	420	1166	228	1394	2795
Apprch %	26.3	73.7		31	69		83.6	16.4		
Total %	9.2	25.9	35.1	4.7	10.4	15	41.7	8.2	49.9	

Start Time	Foothill Boulevard Westbound			Rancho Avenue Northbound			Foothill Boulevard Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	40	90	130	16	42	58	153	37	190	378
07:30 AM	40	100	140	19	41	60	198	40	238	438
07:45 AM	40	91	131	27	52	79	174	30	204	414
08:00 AM	37	107	144	16	33	49	158	32	190	383
Total Volume	157	388	545	78	168	246	683	139	822	1613
% App. Total	28.8	71.2		31.7	68.3		83.1	16.9		
PHF	.981	.907	.946	.722	.808	.778	.862	.869	.863	.921



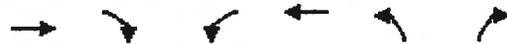
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	40	90	130	16	42	58	153	37	190
+15 mins.	40	100	140	19	41	60	198	40	238
+30 mins.	40	91	131	27	52	79	174	30	204
+45 mins.	37	107	144	16	33	49	158	32	190
Total Volume	157	388	545	78	168	246	683	139	822
% App. Total	28.8	71.2		31.7	68.3		83.1	16.9	
PHF	.981	.907	.946	.722	.808	.778	.862	.869	.863

HCM Unsignalized Intersection Capacity Analysis  
 3: Foothill Blvd & Rancho Ave *AM*

5/16/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↙	↗
Volume (veh/h)	683	139	157	388	78	168
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	742	151	171	422	85	183
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage (veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			893		1370	447
vC1, stage 1 conf vol					818	
vC2, stage 2 conf vol					552	
vCu, unblocked vol			893		1370	447
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			77		72	67
cM capacity (veh/h)			755		299	559

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	495	399	171	211	211	85	183
Volume Left	0	0	171	0	0	85	0
Volume Right	0	151	0	0	0	0	183
cSH	1700	1700	755	1700	1700	299	559
Volume to Capacity	0.29	0.23	0.23	0.12	0.12	0.28	0.33
Queue Length 95th (ft)	0	0	22	0	0	29	35
Control Delay (s)	0.0	0.0	11.2	0.0	0.0	21.8	14.5
Lane LOS			B			C	B
Approach Delay (s)	0.0		3.2			16.8	
Approach LOS						C	

Intersection Summary							
Average Delay			3.7				
Intersection Capacity Utilization			46.3%		ICU Level of Service		A
Analysis Period (min)			15				

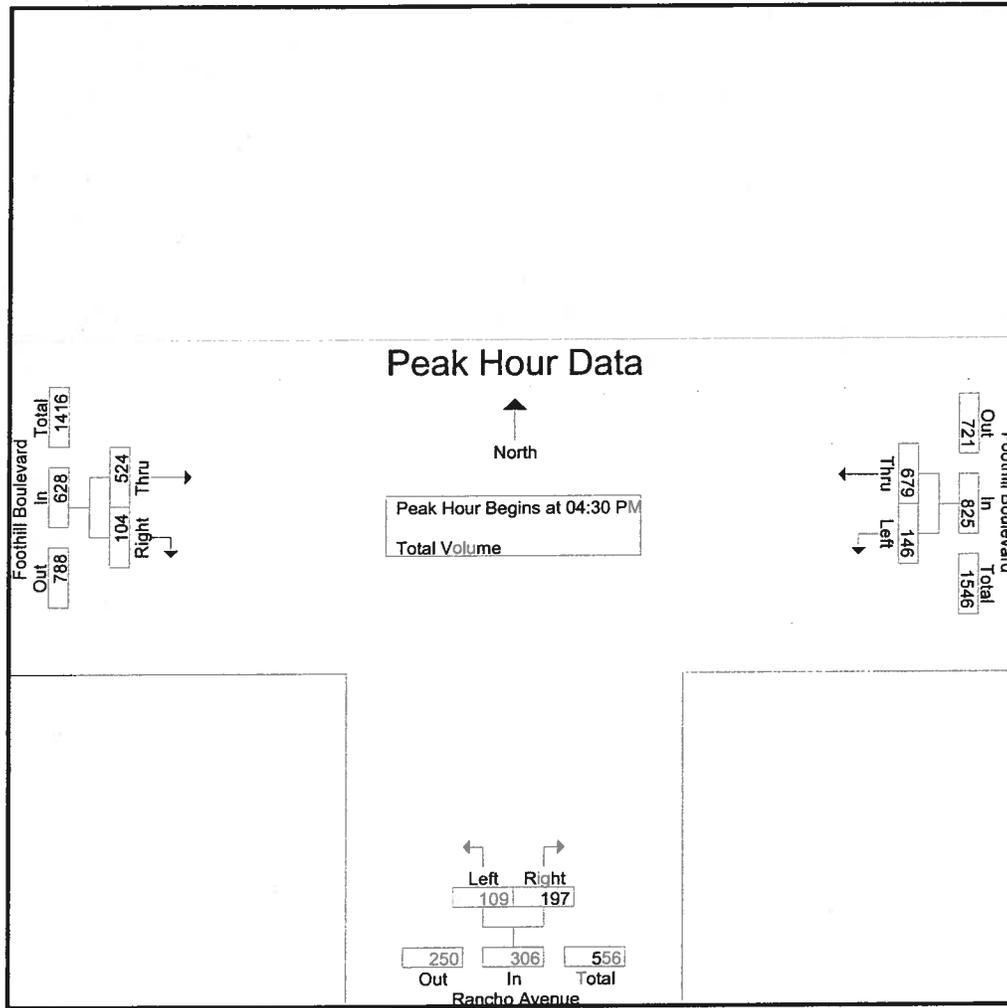
City of San Bernardino  
 N/S: Rancho Avenue  
 E/W: Foothill Boulevard  
 Weather: Sunny

File Name : SBCRAFOPM  
 Site Code : 11115097  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Foothill Boulevard Westbound			Rancho Avenue Northbound			Foothill Boulevard Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	54	158	212	31	39	70	140	24	164	446
04:15 PM	42	141	183	28	40	68	119	17	136	387
04:30 PM	39	161	200	20	53	73	141	18	159	432
04:45 PM	42	149	191	23	42	65	132	24	156	412
Total	177	609	786	102	174	276	532	83	615	1677
05:00 PM	32	181	213	35	53	88	129	33	162	463
05:15 PM	33	188	221	31	49	80	122	29	151	452
05:30 PM	40	147	187	32	49	81	108	30	138	406
05:45 PM	35	140	175	22	44	66	128	26	154	395
Total	140	656	796	120	195	315	487	118	605	1716
Grand Total	317	1265	1582	222	369	591	1019	201	1220	3393
Apprch %	20	80		37.6	62.4		83.5	16.5		
Total %	9.3	37.3	46.6	6.5	10.9	17.4	30	5.9	36	

Start Time	Foothill Boulevard Westbound			Rancho Avenue Northbound			Foothill Boulevard Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. 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	39	161	200	20	53	73	141	18	159	432
04:45 PM	42	149	191	23	42	65	132	24	156	412
05:00 PM	32	181	213	35	53	88	129	33	162	463
05:15 PM	33	188	221	31	49	80	122	29	151	452
Total Volume	146	679	825	109	197	306	524	104	628	1759
% App. Total	17.7	82.3		35.6	64.4		83.4	16.6		
PHF	.869	.903	.933	.779	.929	.869	.929	.788	.969	.950



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			05:00 PM			04:30 PM		
+0 mins.	39	161	200	35	53	88	141	18	159
+15 mins.	42	149	191	31	49	80	132	24	156
+30 mins.	32	181	213	32	49	81	129	33	162
+45 mins.	33	188	221	22	44	66	122	29	151
Total Volume	146	679	825	120	195	315	524	104	628
% App. Total	17.7	82.3		38.1	61.9		83.4	16.6	
PHF	.869	.903	.933	.857	.920	.895	.929	.788	.969

# HCM Unsignalized Intersection Capacity Analysis

3: Foothill Blvd & Rancho Ave *PM*

5/16/2011

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Volume (veh/h)	524	104	146	679	109	197
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	570	113	159	738	118	214
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage (veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			683		1312	341
vC1, stage 1 conf vol					626	
vC2, stage 2 conf vol					686	
vCu, unblocked vol			683		1312	341
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			82		63	67
cM capacity (veh/h)			906		316	655

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	380	303	159	369	369	118	214
Volume Left	0	0	159	0	0	118	0
Volume Right	0	113	0	0	0	0	214
cSH	1700	1700	906	1700	1700	316	655
Volume to Capacity	0.22	0.18	0.18	0.22	0.22	0.37	0.33
Queue Length 95th (ft)	0	0	16	0	0	42	36
Control Delay (s)	0.0	0.0	9.8	0.0	0.0	23.1	13.1
Lane LOS			A			C	B
Approach Delay (s)	0.0		1.7			16.7	
Approach LOS						C	

Intersection Summary							
Average Delay			3.7				
Intersection Capacity Utilization			41.9%		ICU Level of Service		A
Analysis Period (min)			15				

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 Corona, CA 92878  
 (951) 268-6268

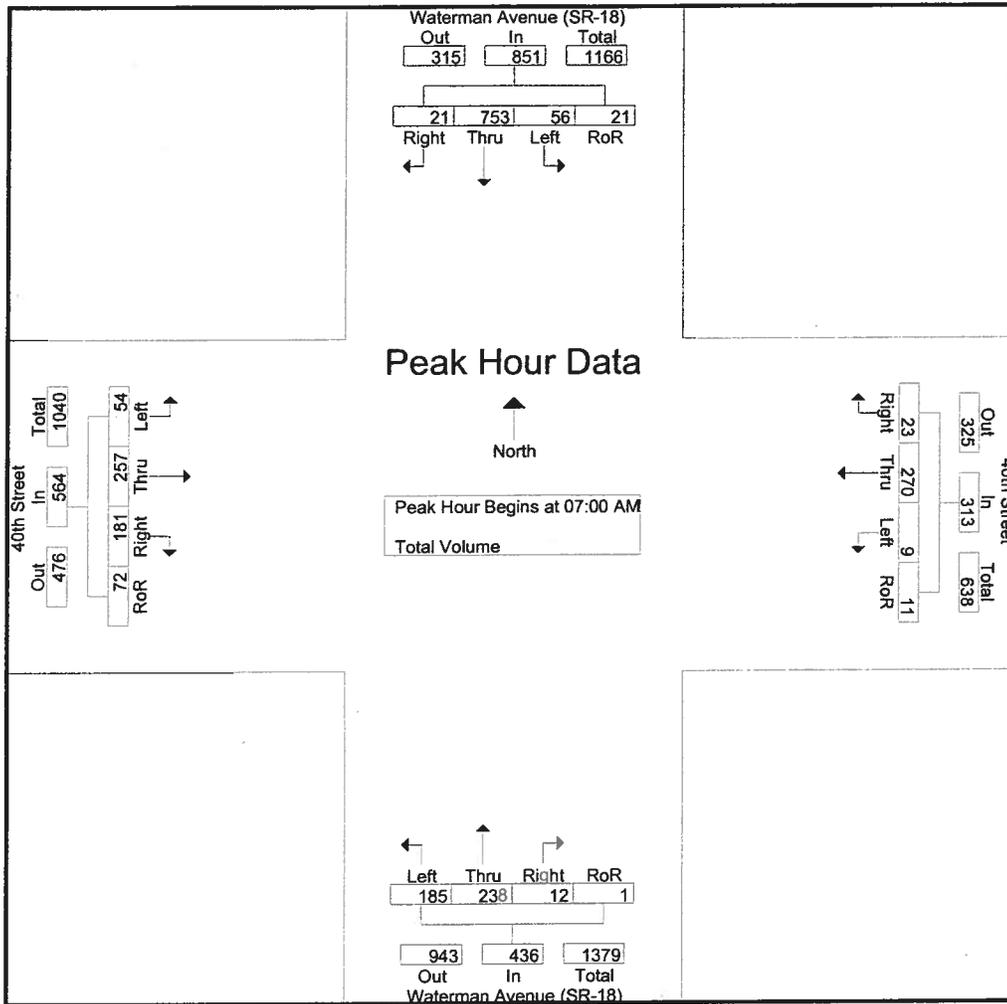
City of San Bernardino  
 N/S: Waterman Avenue (SR-18)  
 E/W: 40th Street  
 Weather: Sunny

File Name : SBCWA40AM  
 Site Code : 11115099  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Waterman Avenue (SR-18) Southbound					40th Street Westbound					Waterman Avenue (SR-18) Northbound					40th Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
07:00 AM	12	199	6	5	222	1	75	5	4	85	37	51	2	0	90	13	53	44	17	127	524
07:15 AM	9	193	6	7	215	3	82	5	3	93	60	56	5	1	122	9	61	51	27	148	578
07:30 AM	20	214	3	5	242	5	55	8	4	72	42	66	2	0	110	16	93	49	15	173	597
07:45 AM	15	147	6	4	172	0	58	5	0	63	46	65	3	0	114	16	50	37	13	116	465
<b>Total</b>	<b>56</b>	<b>753</b>	<b>21</b>	<b>21</b>	<b>851</b>	<b>9</b>	<b>270</b>	<b>23</b>	<b>11</b>	<b>313</b>	<b>185</b>	<b>238</b>	<b>12</b>	<b>1</b>	<b>436</b>	<b>54</b>	<b>257</b>	<b>181</b>	<b>72</b>	<b>564</b>	<b>2164</b>
08:00 AM	14	124	6	2	146	4	51	4	2	61	32	54	5	0	91	5	60	38	4	107	405
08:15 AM	11	141	8	4	164	4	58	6	2	70	58	53	7	0	118	13	66	49	11	139	491
08:30 AM	6	151	6	4	167	2	68	10	3	83	55	57	3	0	115	12	80	65	18	175	540
08:45 AM	9	132	8	3	152	1	59	3	1	64	52	75	1	0	128	11	63	47	14	135	479
<b>Total</b>	<b>40</b>	<b>548</b>	<b>28</b>	<b>13</b>	<b>629</b>	<b>11</b>	<b>236</b>	<b>23</b>	<b>8</b>	<b>278</b>	<b>197</b>	<b>239</b>	<b>16</b>	<b>0</b>	<b>452</b>	<b>41</b>	<b>269</b>	<b>199</b>	<b>47</b>	<b>556</b>	<b>1915</b>
<b>Grand Total</b>	<b>96</b>	<b>1301</b>	<b>49</b>	<b>34</b>	<b>1480</b>	<b>20</b>	<b>506</b>	<b>46</b>	<b>19</b>	<b>591</b>	<b>382</b>	<b>477</b>	<b>28</b>	<b>1</b>	<b>888</b>	<b>95</b>	<b>526</b>	<b>380</b>	<b>119</b>	<b>1120</b>	<b>4079</b>
<b>Apprch %</b>	<b>6.5</b>	<b>87.9</b>	<b>3.3</b>	<b>2.3</b>		<b>3.4</b>	<b>85.6</b>	<b>7.8</b>	<b>3.2</b>		<b>43</b>	<b>53.7</b>	<b>3.2</b>	<b>0.1</b>		<b>8.5</b>	<b>47</b>	<b>33.9</b>	<b>10.6</b>		
<b>Total %</b>	<b>2.4</b>	<b>31.9</b>	<b>1.2</b>	<b>0.8</b>	<b>36.3</b>	<b>0.5</b>	<b>12.4</b>	<b>1.1</b>	<b>0.5</b>	<b>14.5</b>	<b>9.4</b>	<b>11.7</b>	<b>0.7</b>	<b>0</b>	<b>21.8</b>	<b>2.3</b>	<b>12.9</b>	<b>9.3</b>	<b>2.9</b>	<b>27.5</b>	

Start Time	Waterman Avenue (SR-18) Southbound					40th Street Westbound					Waterman Avenue (SR-18) Northbound					40th Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	12	199	6	5	222	1	75	5	4	85	37	51	2	0	90	13	53	44	17	127	524
07:15 AM	9	193	6	7	215	3	82	5	3	93	60	56	5	1	122	9	61	51	27	148	578
07:30 AM	20	214	3	5	242	5	55	8	4	72	42	66	2	0	110	16	93	49	15	173	597
07:45 AM	15	147	6	4	172	0	58	5	0	63	46	65	3	0	114	16	50	37	13	116	465
<b>Total Volume</b>	<b>56</b>	<b>753</b>	<b>21</b>	<b>21</b>	<b>851</b>	<b>9</b>	<b>270</b>	<b>23</b>	<b>11</b>	<b>313</b>	<b>185</b>	<b>238</b>	<b>12</b>	<b>1</b>	<b>436</b>	<b>54</b>	<b>257</b>	<b>181</b>	<b>72</b>	<b>564</b>	<b>2164</b>
<b>% App. Total</b>	<b>6.6</b>	<b>88.5</b>	<b>2.5</b>	<b>2.5</b>		<b>2.9</b>	<b>86.3</b>	<b>7.3</b>	<b>3.5</b>		<b>42.4</b>	<b>54.6</b>	<b>2.8</b>	<b>0.2</b>		<b>9.6</b>	<b>45.6</b>	<b>32.1</b>	<b>12.8</b>		
<b>PHF</b>	<b>.700</b>	<b>.880</b>	<b>.875</b>	<b>.750</b>	<b>.879</b>	<b>.450</b>	<b>.823</b>	<b>.719</b>	<b>.688</b>	<b>.841</b>	<b>.771</b>	<b>.902</b>	<b>.600</b>	<b>.250</b>	<b>.893</b>	<b>.844</b>	<b>.691</b>	<b>.887</b>	<b>.667</b>	<b>.815</b>	<b>.906</b>



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					07:00 AM					08:00 AM					07:00 AM				
+0 mins.	12	199	6	5	222	1	75	5	4	85	32	54	5	0	91	13	53	44	17	127
+15 mins.	9	193	6	7	215	3	82	5	3	93	58	53	7	0	118	9	61	51	27	148
+30 mins.	20	214	3	5	242	5	55	8	4	72	55	57	3	0	115	16	93	49	15	173
+45 mins.	15	147	6	4	172	0	58	5	0	63	52	75	1	0	128	16	50	37	13	116
Total Volume	56	753	21	21	851	9	270	23	11	313	197	239	16	0	452	54	257	181	72	564
% App. Total	6.6	88.5	2.5	2.5		2.9	86.3	7.3	3.5		43.6	52.9	3.5	0		9.6	45.6	32.1	12.8	
PHF	.700	.880	.875	.750	.879	.450	.823	.719	.688	.841	.849	.797	.571	.000	.883	.844	.691	.887	.667	.815

Lanes, Volumes, Timings

3: 40th Street & Waterman Ave *AM*

5/18/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	257	253	9	270	34	185	238	13	56	753	42
Satd. Flow (prot)	1770	3277	0	1770	3479	0	1770	3511	0	1770	3511	0
Flt Permitted	0.459			0.317			0.950			0.950		
Satd. Flow (perm)	855	3277	0	590	3479	0	1770	3511	0	1770	3511	0
Satd. Flow (RTOR)		275			18			11			9	
Lane Group Flow (vph)	59	554	0	10	330	0	201	273	0	61	864	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	19.0	40.0	0.0	10.0	31.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	12.6	12.6		12.6	12.6		12.5	42.9		6.5	32.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.18	0.61		0.09	0.47	
v/c Ratio	0.38	0.68		0.09	0.51		0.64	0.13		0.37	0.52	
Control Delay	31.7	17.3		24.2	26.8		35.7	7.2		36.6	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.7	17.3		24.2	26.8		35.7	7.2		36.6	15.6	
LOS	C	B		C	C		D	A		D	B	
Approach Delay		18.7			26.7			19.3			17.0	
Approach LOS		B			C			B			B	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 19.3

Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: 40th Street & Waterman Ave

10 s	40 s	20 s
19 s	31 s	20 s

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

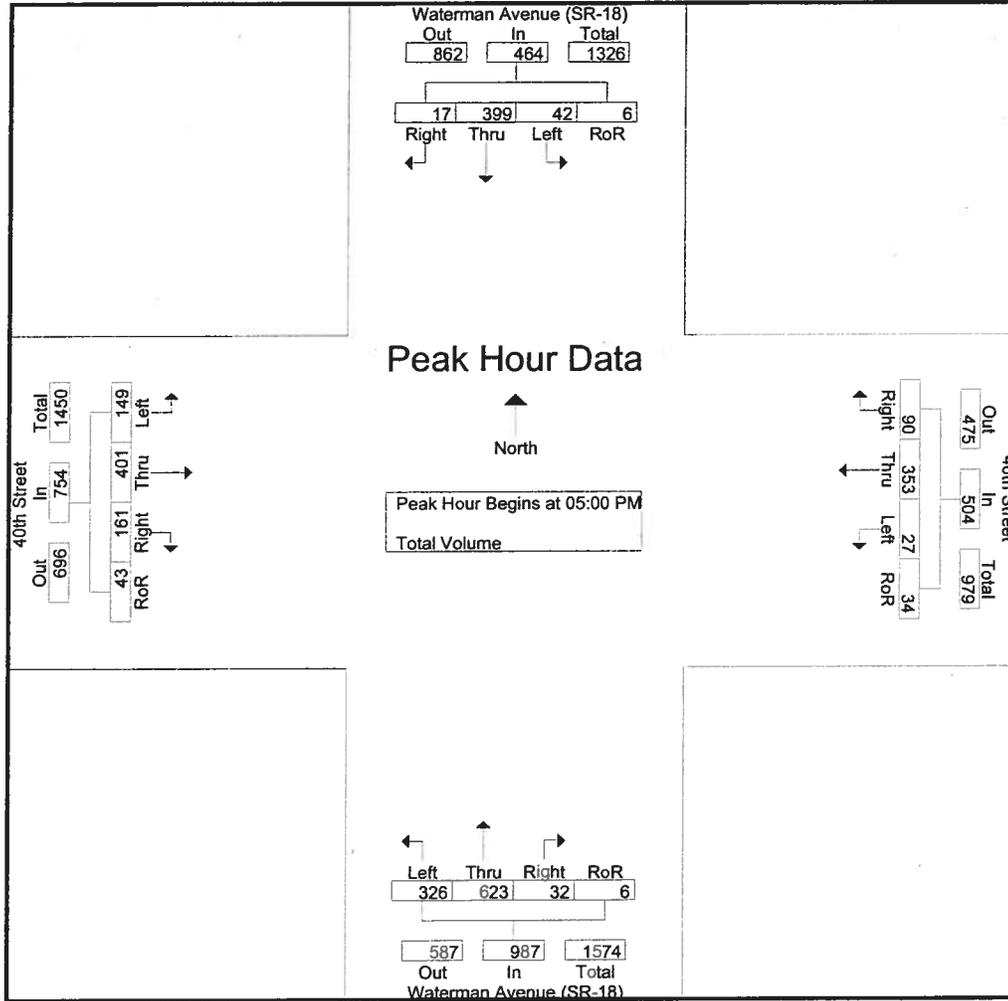
City of San Bernardino  
 N/S: Waterman Avenue (SR-18)  
 E/W: 40th Street  
 Weather: Sunny

File Name : SBCWA40PM  
 Site Code : 11115099  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Waterman Avenue (SR-18) Southbound					40th Street Westbound					Waterman Avenue (SR-18) Northbound					40th Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
04:00 PM	11	104	12	2	129	9	94	18	3	124	68	137	6	1	212	23	75	36	16	150	615
04:15 PM	12	109	3	3	127	3	93	14	9	119	64	121	8	0	193	42	83	59	14	198	637
04:30 PM	6	78	5	3	92	4	89	17	4	114	71	159	5	1	236	36	79	51	18	184	626
04:45 PM	10	103	5	0	118	8	98	28	12	146	54	127	15	1	197	35	87	37	9	168	629
Total	39	394	25	8	466	24	374	77	28	503	257	544	34	3	838	136	324	183	57	700	2507
05:00 PM	12	104	4	0	120	6	75	20	6	107	70	147	10	2	229	29	100	43	10	182	638
05:15 PM	11	107	7	3	128	4	94	26	9	133	76	160	8	2	246	40	91	51	9	191	698
05:30 PM	15	93	4	1	113	9	93	24	8	134	93	166	9	1	269	45	104	33	13	195	711
05:45 PM	4	95	2	2	103	8	91	20	11	130	87	150	5	1	243	35	106	34	11	186	662
Total	42	399	17	6	464	27	353	90	34	504	326	623	32	6	987	149	401	161	43	754	2709
Grand Total	81	793	42	14	930	51	727	167	62	1007	583	1167	66	9	1825	285	725	344	100	1454	5216
Apprch %	8.7	85.3	4.5	1.5		5.1	72.2	16.6	6.2		31.9	63.9	3.6	0.5		19.6	49.9	23.7	6.9		
Total %	1.6	15.2	0.8	0.3	17.8	1	13.9	3.2	1.2	19.3	11.2	22.4	1.3	0.2	35	5.5	13.9	6.6	1.9	27.9	

Start Time	Waterman Avenue (SR-18) Southbound					40th Street Westbound					Waterman Avenue (SR-18) Northbound					40th Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	12	104	4	0	120	6	75	20	6	107	70	147	10	2	229	29	100	43	10	182	638
05:15 PM	11	107	7	3	128	4	94	26	9	133	76	160	8	2	246	40	91	51	9	191	698
05:30 PM	15	93	4	1	113	9	93	24	8	134	93	166	9	1	269	45	104	33	13	195	711
05:45 PM	4	95	2	2	103	8	91	20	11	130	87	150	5	1	243	35	106	34	11	186	662
Total Volume	42	399	17	6	464	27	353	90	34	504	326	623	32	6	987	149	401	161	43	754	2709
% App. Total	9.1	86	3.7	1.3		5.4	70	17.9	6.7		33	63.1	3.2	0.6		19.8	53.2	21.4	5.7		
PHF	.700	.932	.607	.500	.906	.750	.939	.865	.773	.940	.876	.938	.800	.750	.917	.828	.946	.789	.827	.967	.953



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					04:45 PM					05:00 PM					05:00 PM				
+0 mins.	10	103	5	0	118	8	98	28	12	146	70	147	10	2	229	29	100	43	10	182
+15 mins.	12	104	4	0	120	6	75	20	6	107	76	160	8	2	246	40	91	51	9	191
+30 mins.	11	107	7	3	128	4	94	26	9	133	93	166	9	1	269	45	104	33	13	195
+45 mins.	15	93	4	1	113	9	93	24	8	134	87	150	5	1	243	35	106	34	11	186
Total Volume	48	407	20	4	479	27	360	98	35	520	326	623	32	6	987	149	401	161	43	754
% App. Total	10	85	4.2	0.8		5.2	69.2	18.8	6.7		33	63.1	3.2	0.6		19.8	53.2	21.4	5.7	
PHF	.800	.951	.714	.333	.936	.750	.918	.875	.729	.890	.876	.938	.800	.750	.917	.828	.946	.789	.827	.967

Lanes, Volumes, Timings

3: 40th Street & Waterman Ave PM

5/18/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	149	401	204	27	353	124	326	623	38	42	399	23
Satd. Flow (prot)	1770	3359	0	1770	3401	0	1770	3507	0	1770	3511	0
Flt Permitted	0.346			0.243			0.950			0.950		
Satd. Flow (perm)	645	3359	0	453	3401	0	1770	3507	0	1770	3511	0
Satd. Flow (RTOR)		137			75			11			8	
Lane Group Flow (vph)	162	658	0	29	519	0	354	718	0	46	459	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Total Split (s)	27.0	27.0	0.0	27.0	27.0	0.0	22.0	33.0	0.0	10.0	21.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	20.0	20.0		20.0	20.0		16.8	36.0		5.9	21.2	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.24	0.51		0.08	0.30	
v/c Ratio	0.88	0.62		0.22	0.51		0.83	0.40		0.31	0.43	
Control Delay	66.3	19.1		22.2	18.8		43.8	13.0		35.8	22.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.3	19.1		22.2	18.8		43.8	13.0		35.8	22.4	
LOS	E	B		C	B		D	B		D	C	
Approach Delay		28.5			19.0			23.2			23.6	
Approach LOS		C			B			C			C	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.9

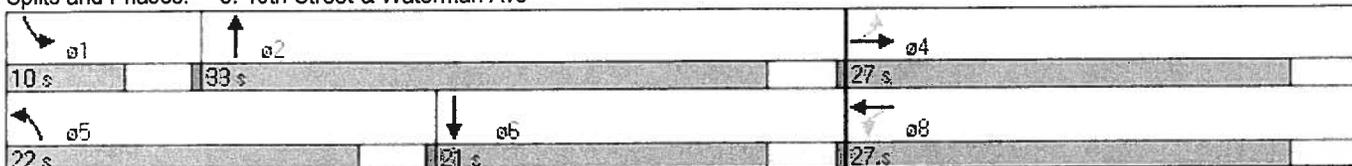
Intersection Capacity Utilization 65.1%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 3: 40th Street & Waterman Ave



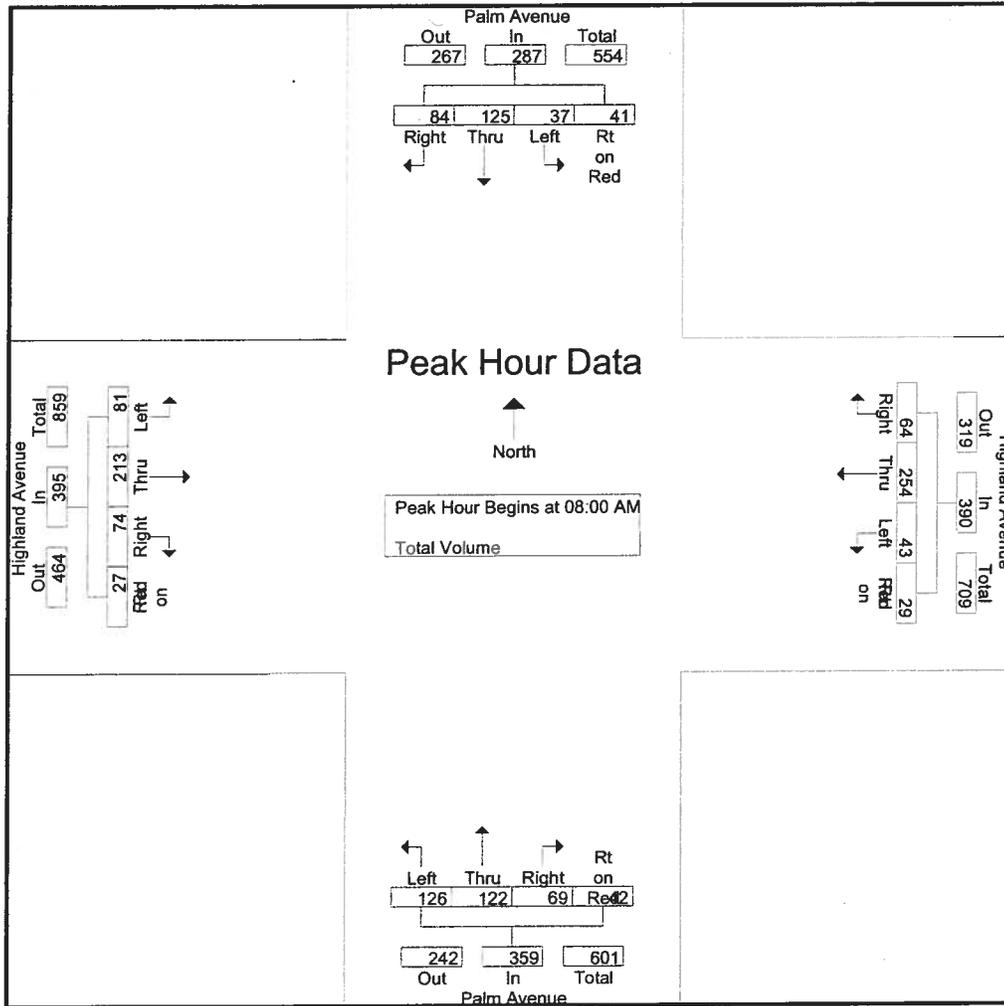
City of San Bernardino  
 N/S: Palm Avenue  
 E/W: Highland Avenue  
 Weather: Sunny

File Name : SBCPAHIAM  
 Site Code : 11115009  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Palm Avenue Southbound					Highland Avenue Westbound					Palm Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
07:00 AM	3	10	26	19	58	8	62	3	0	73	19	5	4	4	32	6	39	16	6	67	230
07:15 AM	4	9	27	21	61	5	79	4	1	89	40	6	11	4	61	3	58	24	13	98	309
07:30 AM	6	23	18	11	58	14	67	4	1	86	21	8	15	9	53	11	63	29	13	116	313
07:45 AM	5	19	21	13	58	10	93	7	3	113	32	5	21	14	72	14	52	16	6	88	331
<b>Total</b>	<b>18</b>	<b>61</b>	<b>92</b>	<b>64</b>	<b>235</b>	<b>37</b>	<b>301</b>	<b>18</b>	<b>5</b>	<b>361</b>	<b>112</b>	<b>24</b>	<b>51</b>	<b>31</b>	<b>218</b>	<b>34</b>	<b>212</b>	<b>85</b>	<b>38</b>	<b>369</b>	<b>1183</b>
08:00 AM	8	14	9	7	38	14	81	7	2	104	35	19	18	11	83	13	39	14	3	69	294
08:15 AM	9	25	19	5	58	6	58	23	11	98	28	35	14	8	85	15	50	19	5	89	330
08:30 AM	12	48	25	13	98	17	58	24	9	108	28	37	10	8	83	42	48	24	11	125	414
08:45 AM	8	38	31	16	93	6	57	10	7	80	35	31	27	15	108	11	76	17	8	112	393
<b>Total</b>	<b>37</b>	<b>125</b>	<b>84</b>	<b>41</b>	<b>287</b>	<b>43</b>	<b>254</b>	<b>64</b>	<b>29</b>	<b>390</b>	<b>126</b>	<b>122</b>	<b>69</b>	<b>42</b>	<b>359</b>	<b>81</b>	<b>213</b>	<b>74</b>	<b>27</b>	<b>395</b>	<b>1431</b>
<b>Grand Total</b>	<b>55</b>	<b>186</b>	<b>176</b>	<b>105</b>	<b>522</b>	<b>80</b>	<b>555</b>	<b>82</b>	<b>34</b>	<b>751</b>	<b>238</b>	<b>146</b>	<b>120</b>	<b>73</b>	<b>577</b>	<b>115</b>	<b>425</b>	<b>159</b>	<b>65</b>	<b>764</b>	<b>2614</b>
<b>Apprch %</b>	<b>10.5</b>	<b>35.6</b>	<b>33.7</b>	<b>20.1</b>		<b>10.7</b>	<b>73.9</b>	<b>10.9</b>	<b>4.5</b>		<b>41.2</b>	<b>25.3</b>	<b>20.8</b>	<b>12.7</b>		<b>15.1</b>	<b>55.6</b>	<b>20.8</b>	<b>8.5</b>		
<b>Total %</b>	<b>2.1</b>	<b>7.1</b>	<b>6.7</b>	<b>4</b>	<b>20</b>	<b>3.1</b>	<b>21.2</b>	<b>3.1</b>	<b>1.3</b>	<b>28.7</b>	<b>9.1</b>	<b>5.6</b>	<b>4.6</b>	<b>2.8</b>	<b>22.1</b>	<b>4.4</b>	<b>16.3</b>	<b>6.1</b>	<b>2.5</b>	<b>29.2</b>	

Start Time	Palm Avenue Southbound					Highland Avenue Westbound					Palm Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. 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	8	14	9	7	38	14	81	7	2	104	35	19	18	11	83	13	39	14	3	69	294
08:15 AM	9	25	19	5	58	6	58	23	11	98	28	35	14	8	85	15	50	19	5	89	330
08:30 AM	12	48	25	13	98	17	58	24	9	108	28	37	10	8	83	42	48	24	11	125	414
08:45 AM	8	38	31	16	93	6	57	10	7	80	35	31	27	15	108	11	76	17	8	112	393
<b>Total Volume</b>	<b>37</b>	<b>125</b>	<b>84</b>	<b>41</b>	<b>287</b>	<b>43</b>	<b>254</b>	<b>64</b>	<b>29</b>	<b>390</b>	<b>126</b>	<b>122</b>	<b>69</b>	<b>42</b>	<b>359</b>	<b>81</b>	<b>213</b>	<b>74</b>	<b>27</b>	<b>395</b>	<b>1431</b>
<b>% App. Total</b>	<b>12.9</b>	<b>43.6</b>	<b>29.3</b>	<b>14.3</b>		<b>11</b>	<b>65.1</b>	<b>16.4</b>	<b>7.4</b>		<b>35.1</b>	<b>34</b>	<b>19.2</b>	<b>11.7</b>		<b>20.5</b>	<b>53.9</b>	<b>18.7</b>	<b>6.8</b>		
<b>PHF</b>	<b>.771</b>	<b>.651</b>	<b>.677</b>	<b>.641</b>	<b>.732</b>	<b>.632</b>	<b>.784</b>	<b>.667</b>	<b>.659</b>	<b>.903</b>	<b>.900</b>	<b>.824</b>	<b>.639</b>	<b>.700</b>	<b>.831</b>	<b>.482</b>	<b>.701</b>	<b>.771</b>	<b>.614</b>	<b>.790</b>	<b>.864</b>



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					07:45 AM					08:00 AM					08:00 AM				
+0 mins.	8	14	9	7	38	10	93	7	3	113	35	19	18	11	83	13	39	14	3	69
+15 mins.	9	25	19	5	58	14	81	7	2	104	28	35	14	8	85	15	50	19	5	89
+30 mins.	12	48	25	13	98	6	58	23	11	98	28	37	10	8	83	42	48	24	11	125
+45 mins.	8	38	31	16	93	17	58	24	9	108	35	31	27	15	108	11	76	17	8	112
Total Volume	37	125	84	41	287	47	290	61	25	423	126	122	69	42	359	81	213	74	27	395
% App. Total	12.9	43.6	29.3	14.3		11.1	68.6	14.4	5.9		35.1	34	19.2	11.7		20.5	53.9	18.7	6.8	
PHF	.771	.651	.677	.641	.732	.691	.780	.635	.568	.936	.900	.824	.639	.700	.831	.482	.701	.771	.614	.790

Lanes, Volumes, Timings  
3: Highland Ave & Palm Ave *AM*

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	213	101	43	254	93	126	122	111	37	125	125
Satd. Flow (prot)	1770	3369	0	1770	3398	0	3433	1863	1583	1770	3274	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3369	0	1770	3398	0	3433	1863	1583	1770	3274	0
Satd. Flow (RTOR)		76			60				121		136	
Lane Group Flow (vph)	88	342	0	47	377	0	137	133	121	40	272	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Total Split (s)	11.0	20.0	0.0	23.0	32.0	0.0	16.0	36.0	36.0	11.0	31.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	6.9	15.5		7.9	14.5		8.9	51.2	51.2	7.5	45.8	
Actuated g/C Ratio	0.08	0.17		0.09	0.16		0.10	0.57	0.57	0.08	0.51	
v/c Ratio	0.65	0.53		0.30	0.63		0.40	0.13	0.13	0.27	0.16	
Control Delay	63.5	29.4		42.9	33.8		41.2	13.2	3.6	42.6	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	63.5	29.4		42.9	33.8		41.2	13.2	3.6	42.6	7.7	
LOS	E	C		D	C		D	B	A	D	A	
Approach Delay		36.3			34.8			20.1			12.2	
Approach LOS		D			C			C			B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 27.0  
 Intersection Capacity Utilization 38.9%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service A

Splits and Phases: 3: Highland Ave & Palm Ave

ø1	ø2	ø3	ø4
11 s	36 s	23 s	20 s
ø5	ø6	ø7	ø8
16 s	31 s	11 s	32 s

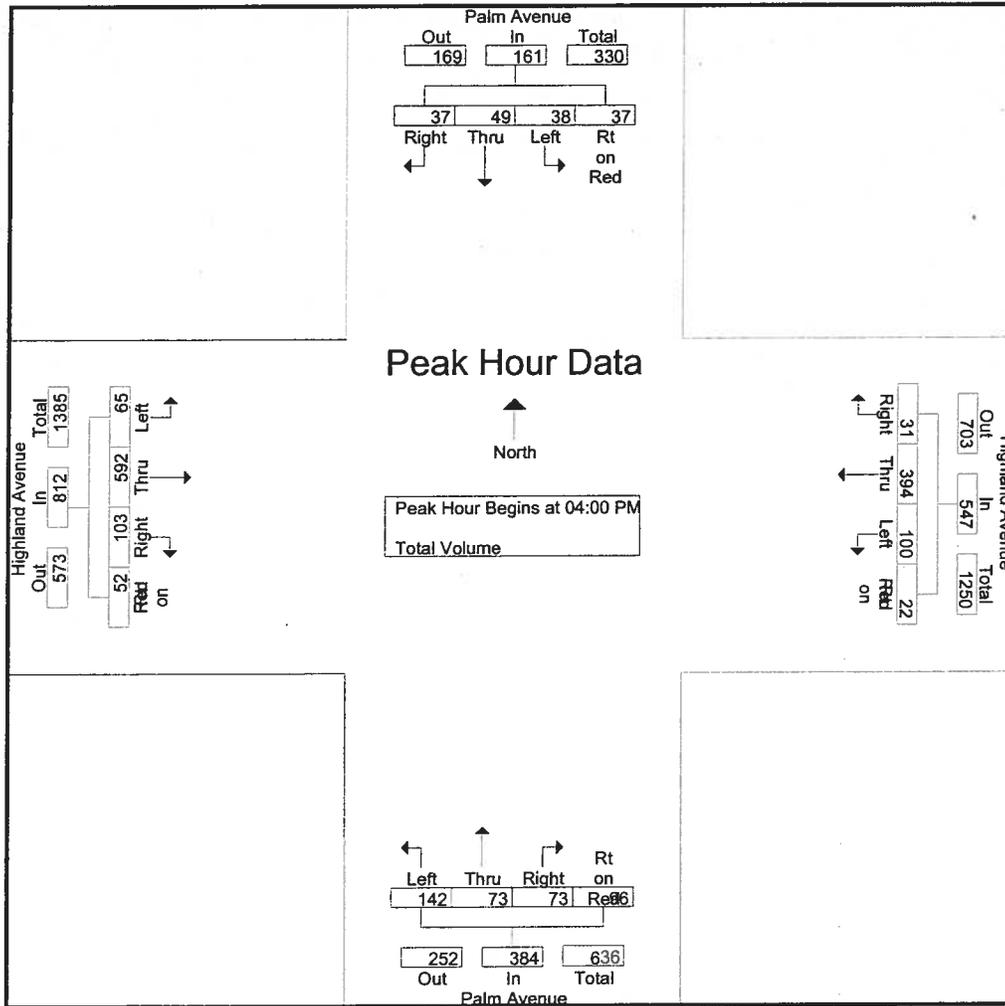
City of San Bernardino  
 N/S: Palm Avenue  
 E/W: Highland Avenue  
 Weather: Sunny

File Name : SBCPAHIPM  
 Site Code : 11115009  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Palm Avenue Southbound					Highland Avenue Westbound					Palm Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
04:00 PM	8	15	12	9	44	22	105	11	6	144	22	15	22	19	78	12	131	25	13	181	447
04:15 PM	13	9	15	11	48	26	115	11	7	159	28	20	26	22	96	14	135	29	17	195	498
04:30 PM	10	13	6	8	37	23	89	2	6	120	51	15	7	23	96	19	148	24	11	202	455
04:45 PM	7	12	4	9	32	29	85	7	3	124	41	23	18	32	114	20	178	25	11	234	504
Total	38	49	37	37	161	100	394	31	22	547	142	73	73	96	384	65	592	103	52	812	1904
05:00 PM	18	15	1	14	48	29	87	8	2	126	40	22	12	28	102	11	112	18	11	152	428
05:15 PM	6	12	5	13	36	16	125	9	5	155	31	20	7	21	79	15	139	22	9	185	455
05:30 PM	12	17	12	5	46	28	83	13	2	126	39	30	12	22	103	12	100	16	13	141	416
05:45 PM	11	15	5	6	37	13	102	6	4	125	36	23	10	18	87	12	120	15	5	152	401
Total	47	59	23	38	167	86	397	36	13	532	146	95	41	89	371	50	471	71	38	630	1700
Grand Total	85	108	60	75	328	186	791	67	35	1079	288	168	114	185	755	115	1063	174	90	1442	3604
Apprch %	25.9	32.9	18.3	22.9		17.2	73.3	6.2	3.2		38.1	22.3	15.1	24.5		8	73.7	12.1	6.2		
Total %	2.4	3	1.7	2.1	9.1	5.2	21.9	1.9	1	29.9	8	4.7	3.2	5.1	20.9	3.2	29.5	4.8	2.5	40	

Start Time	Palm Avenue Southbound					Highland Avenue Westbound					Palm Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	8	15	12	9	44	22	105	11	6	144	22	15	22	19	78	12	131	25	13	181	447
04:15 PM	13	9	15	11	48	26	115	11	7	159	28	20	26	22	96	14	135	29	17	195	498
04:30 PM	10	13	6	8	37	23	89	2	6	120	51	15	7	23	96	19	148	24	11	202	455
04:45 PM	7	12	4	9	32	29	85	7	3	124	41	23	18	32	114	20	178	25	11	234	504
Total Volume	38	49	37	37	161	100	394	31	22	547	142	73	73	96	384	65	592	103	52	812	1904
% App. Total	23.6	30.4	23	23		18.3	72	5.7	4		37	19	19	25		8	72.9	12.7	6.4		
PHF	.731	.817	.617	.841	.839	.862	.857	.705	.786	.860	.696	.793	.702	.750	.842	.813	.831	.888	.765	.868	.944



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

Peak Hour for Each Approach Begins at:

	05:00 PM					04:00 PM					04:15 PM					04:00 PM				
+0 mins.	18	15	1	14	48	22	105	11	6	144	28	20	26	22	96	12	131	25	13	181
+15 mins.	6	12	5	13	36	26	115	11	7	159	51	15	7	23	96	14	135	29	17	195
+30 mins.	12	17	12	5	46	23	89	2	6	120	41	23	18	32	114	19	148	24	11	202
+45 mins.	11	15	5	6	37	29	85	7	3	124	40	22	12	28	102	20	178	25	11	234
Total Volume	47	59	23	38	167	100	394	31	22	547	160	80	63	105	408	65	592	103	52	812
% App. Total	28.1	35.3	13.8	22.8		18.3	72	5.7	4		39.2	19.6	15.4	25.7		8	72.9	12.7	6.4	
PHF	.653	.868	.479	.679	.870	.862	.857	.705	.786	.860	.784	.870	.606	.820	.895	.813	.831	.888	.765	.868

Lanes, Volumes, Timings  
 3: Highland Ave & Palm Ave PM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	592	155	100	394	53	142	73	169	38	49	74
Satd. Flow (prot)	1770	3429	0	1770	3476	0	3433	1863	1583	1770	3221	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3429	0	1770	3476	0	3433	1863	1583	1770	3221	0
Satd. Flow (RTOR)		32			17				184		80	
Lane Group Flow (vph)	71	811	0	109	486	0	154	79	184	41	133	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Total Split (s)	11.0	20.0	0.0	23.0	32.0	0.0	16.0	36.0	36.0	11.0	31.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	6.7	26.3		10.8	30.2		9.4	36.4	36.4	6.6	29.6	
Actuated g/C Ratio	0.07	0.29		0.12	0.34		0.10	0.40	0.40	0.07	0.33	
v/c Ratio	0.54	0.79		0.51	0.41		0.43	0.10	0.25	0.32	0.12	
Control Delay	55.4	37.2		44.8	24.3		41.2	19.2	4.1	46.1	10.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.4	37.2		44.8	24.3		41.2	19.2	4.1	46.1	10.3	
LOS	E	D		D	C		D	B	A	D	B	
Approach Delay		38.7			28.1			20.7			18.8	
Approach LOS		D			C			C			B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 30.3  
 Intersection Capacity Utilization 48.0%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service A

Splits and Phases: 3: Highland Ave & Palm Ave

ø1	ø2	ø3	ø4
11 s	36 s	23 s	20 s
ø5	ø6	ø7	ø8
16 s	31 s	11 s	32 s

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

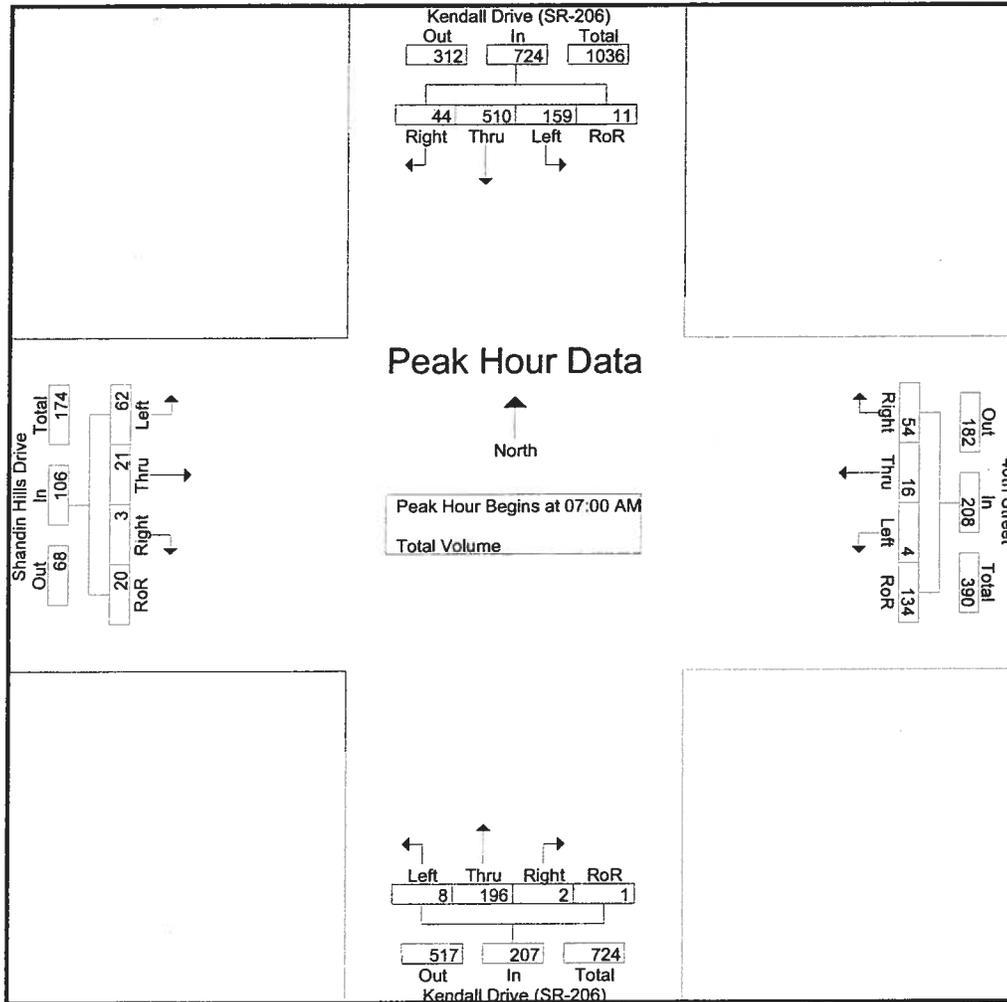
City of San Bernardino  
 N/S: Kendall Drive (SR-206)  
 E/W: 40th Street  
 Weather: Sunny

File Name : SBCKE40AM  
 Site Code : 11115099  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Kendall Drive (SR-206) Southbound					40th Street Westbound					Kendall Drive (SR-206) Northbound					Shandin Hills Drive Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
07:00 AM	26	98	7	1	132	0	2	11	29	42	0	41	1	1	43	21	2	1	6	30	247
07:15 AM	49	150	13	3	215	1	5	14	47	67	0	61	0	0	61	12	10	1	7	30	373
07:30 AM	50	139	14	5	208	2	3	13	32	50	6	47	1	0	54	16	3	1	5	25	337
07:45 AM	34	123	10	2	169	1	6	16	26	49	2	47	0	0	49	13	6	0	2	21	288
<b>Total</b>	<b>159</b>	<b>510</b>	<b>44</b>	<b>11</b>	<b>724</b>	<b>4</b>	<b>16</b>	<b>54</b>	<b>134</b>	<b>208</b>	<b>8</b>	<b>196</b>	<b>2</b>	<b>1</b>	<b>207</b>	<b>62</b>	<b>21</b>	<b>3</b>	<b>20</b>	<b>106</b>	<b>1245</b>
08:00 AM	33	84	9	2	128	0	3	7	36	46	5	39	2	0	46	12	4	3	4	23	243
08:15 AM	45	81	11	5	142	1	5	12	27	45	3	40	0	0	43	18	4	2	2	26	256
08:30 AM	35	83	11	2	131	2	10	10	34	56	1	52	1	0	54	19	7	3	2	31	272
08:45 AM	41	79	10	4	134	5	6	9	49	69	0	48	0	0	48	13	2	2	1	18	269
<b>Total</b>	<b>154</b>	<b>327</b>	<b>41</b>	<b>13</b>	<b>535</b>	<b>8</b>	<b>24</b>	<b>38</b>	<b>146</b>	<b>216</b>	<b>9</b>	<b>179</b>	<b>3</b>	<b>0</b>	<b>191</b>	<b>62</b>	<b>17</b>	<b>10</b>	<b>9</b>	<b>98</b>	<b>1040</b>
<b>Grand Total</b>	<b>313</b>	<b>837</b>	<b>85</b>	<b>24</b>	<b>1259</b>	<b>12</b>	<b>40</b>	<b>92</b>	<b>280</b>	<b>424</b>	<b>17</b>	<b>375</b>	<b>5</b>	<b>1</b>	<b>398</b>	<b>124</b>	<b>38</b>	<b>13</b>	<b>29</b>	<b>204</b>	<b>2285</b>
<b>Apprch %</b>	<b>24.9</b>	<b>66.5</b>	<b>6.8</b>	<b>1.9</b>		<b>2.8</b>	<b>9.4</b>	<b>21.7</b>	<b>66</b>		<b>4.3</b>	<b>94.2</b>	<b>1.3</b>	<b>0.3</b>		<b>60.8</b>	<b>18.6</b>	<b>6.4</b>	<b>14.2</b>		
<b>Total %</b>	<b>13.7</b>	<b>36.6</b>	<b>3.7</b>	<b>1.1</b>	<b>55.1</b>	<b>0.5</b>	<b>1.8</b>	<b>4</b>	<b>12.3</b>	<b>18.6</b>	<b>0.7</b>	<b>16.4</b>	<b>0.2</b>	<b>0</b>	<b>17.4</b>	<b>5.4</b>	<b>1.7</b>	<b>0.6</b>	<b>1.3</b>	<b>8.9</b>	

Start Time	Kendall Drive (SR-206) Southbound					40th Street Westbound					Kendall Drive (SR-206) Northbound					Shandin Hills Drive Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	26	98	7	1	132	0	2	11	29	42	0	41	1	1	43	21	2	1	6	30	247
07:15 AM	49	150	13	3	215	1	5	14	47	67	0	61	0	0	61	12	10	1	7	30	373
07:30 AM	50	139	14	5	208	2	3	13	32	50	6	47	1	0	54	16	3	1	5	25	337
07:45 AM	34	123	10	2	169	1	6	16	26	49	2	47	0	0	49	13	6	0	2	21	288
<b>Total Volume</b>	<b>159</b>	<b>510</b>	<b>44</b>	<b>11</b>	<b>724</b>	<b>4</b>	<b>16</b>	<b>54</b>	<b>134</b>	<b>208</b>	<b>8</b>	<b>196</b>	<b>2</b>	<b>1</b>	<b>207</b>	<b>62</b>	<b>21</b>	<b>3</b>	<b>20</b>	<b>106</b>	<b>1245</b>
<b>% App. Total</b>	<b>22</b>	<b>70.4</b>	<b>6.1</b>	<b>1.5</b>		<b>1.9</b>	<b>7.7</b>	<b>26</b>	<b>64.4</b>		<b>3.9</b>	<b>94.7</b>	<b>1</b>	<b>0.5</b>		<b>58.5</b>	<b>19.8</b>	<b>2.8</b>	<b>18.9</b>		
<b>PHF</b>	<b>.795</b>	<b>.850</b>	<b>.786</b>	<b>.550</b>	<b>.842</b>	<b>.500</b>	<b>.667</b>	<b>.844</b>	<b>.713</b>	<b>.776</b>	<b>.333</b>	<b>.803</b>	<b>.500</b>	<b>.250</b>	<b>.848</b>	<b>.738</b>	<b>.525</b>	<b>.750</b>	<b>.714</b>	<b>.883</b>	<b>.834</b>



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					08:00 AM					07:15 AM					07:00 AM				
+0 mins.	26	98	7	1	132	0	3	7	36	46	0	61	0	0	61	21	2	1	6	30
+15 mins.	49	150	13	3	215	1	5	12	27	45	6	47	1	0	54	12	10	1	7	30
+30 mins.	50	139	14	5	208	2	10	10	34	56	2	47	0	0	49	16	3	1	5	25
+45 mins.	34	123	10	2	169	5	6	9	49	69	5	39	2	0	46	13	6	0	2	21
Total Volume	159	510	44	11	724	8	24	38	146	216	13	194	3	0	210	62	21	3	20	106
% App. Total	22	70.4	6.1	1.5		3.7	11.1	17.6	67.6		6.2	92.4	1.4	0		58.5	19.8	2.8	18.9	
PHF	.795	.850	.786	.550	.842	.400	.600	.792	.745	.783	.542	.795	.375	.000	.861	.738	.525	.750	.714	.883

Lanes, Volumes, Timings  
3: Shandin Hills Drive & Kendall Drive AM

5/18/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	62	21	23	4	16	188	159	510	55	8	196	3
Satd. Flow (prot)	1770	3539	1583	1770	3051	0	1770	3539	1583	1770	3532	0
Flt Permitted	0.950			0.950			0.570			0.445		
Satd. Flow (perm)	1770	3539	1583	1770	3051	0	1062	3539	1583	829	3532	0
Satd. Flow (RTOR)			25		204				60		2	
Lane Group Flow (vph)	67	23	25	4	221	0	173	554	60	9	216	0
Turn Type	Prot		Perm	Prot			pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4				6		6	2		
Total Split (s)	18.0	31.0	31.0	10.0	23.0	0.0	19.0	39.0	39.0	10.0	30.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	8.8	15.7	15.7	5.7	6.8		64.3	62.3	62.3	57.4	51.7	
Actuated g/C Ratio	0.10	0.17	0.17	0.06	0.08		0.71	0.69	0.69	0.64	0.57	
v/c Ratio	0.39	0.04	0.08	0.04	0.53		0.21	0.23	0.05	0.02	0.11	
Control Delay	43.8	29.2	12.9	40.2	12.3		5.9	7.0	2.8	6.1	10.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	43.8	29.2	12.9	40.2	12.3		5.9	7.0	2.8	6.1	10.7	
LOS	D	C	B	D	B		A	A	A	A	B	
Approach Delay		34.2			12.8			6.4			10.5	
Approach LOS		C			B			A			B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.53  
 Intersection Signal Delay: 10.5  
 Intersection Capacity Utilization 40.7%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 3: Shandin Hills Drive & Kendall Drive

φ1	φ2	φ3	φ4
19 s	30 s	10 s	31 s
φ5	φ6	φ7	φ8
10 s	33 s	18 s	23 s

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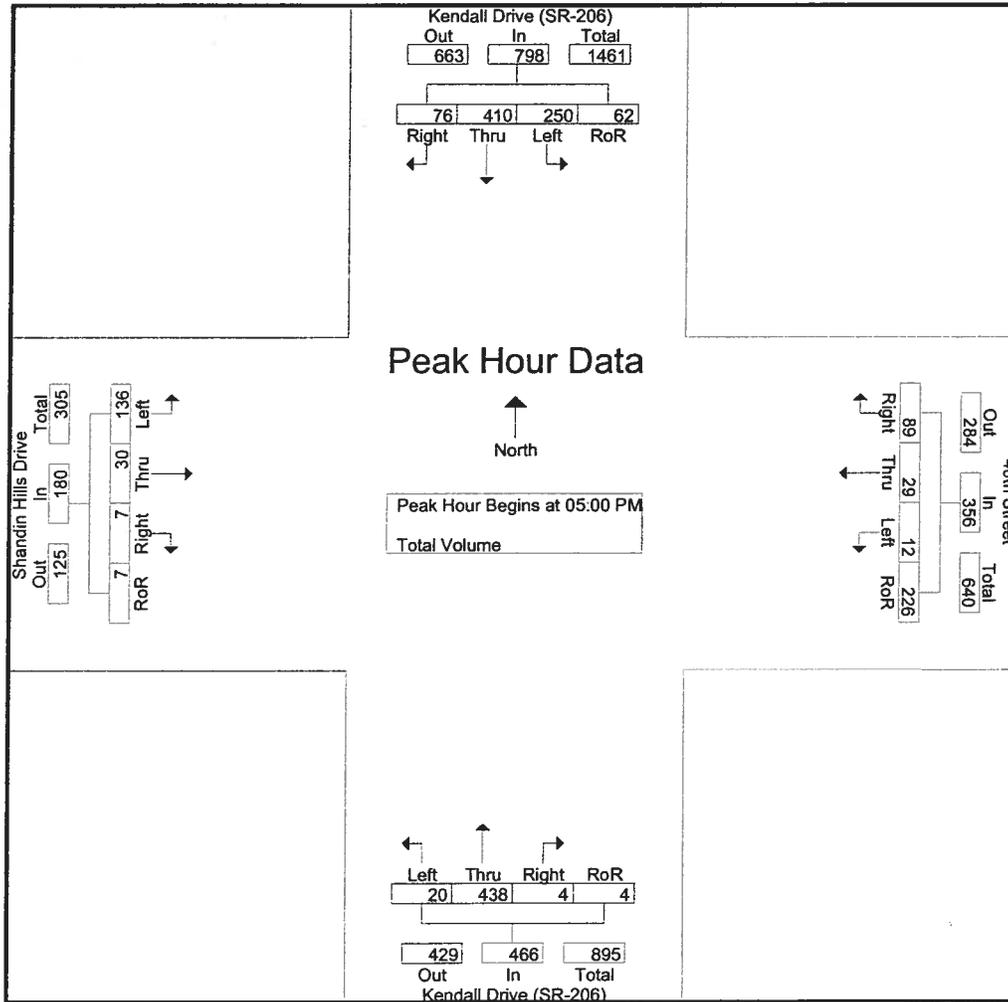
City of San Bernardino  
 N/S: Kendall Drive (SR-206)  
 E/W: 40th Street  
 Weather: Sunny

File Name : SBCKE40PM  
 Site Code : 11115099  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Kendall Drive (SR-206) Southbound					40th Street Westbound					Kendall Drive (SR-206) Northbound					Shandin Hills Drive Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
04:00 PM	64	82	24	4	174	4	7	22	40	73	4	80	2	1	87	30	7	1	1	39	373
04:15 PM	54	100	26	5	185	3	8	10	42	63	6	101	1	1	109	22	7	3	1	33	390
04:30 PM	47	107	22	5	181	3	5	15	55	78	0	73	2	1	76	26	6	4	0	36	371
04:45 PM	63	89	18	6	176	3	7	23	61	94	0	96	1	0	97	25	7	1	3	36	403
<b>Total</b>	<b>228</b>	<b>378</b>	<b>90</b>	<b>20</b>	<b>716</b>	<b>13</b>	<b>27</b>	<b>70</b>	<b>198</b>	<b>308</b>	<b>10</b>	<b>350</b>	<b>6</b>	<b>3</b>	<b>369</b>	<b>103</b>	<b>27</b>	<b>9</b>	<b>5</b>	<b>144</b>	<b>1537</b>
05:00 PM	62	106	14	12	194	1	4	23	51	79	3	100	2	1	106	39	5	1	1	46	425
05:15 PM	64	106	27	9	206	5	13	27	53	98	6	109	1	1	117	22	3	1	2	28	449
05:30 PM	58	88	22	20	188	3	6	23	70	102	4	108	0	1	113	31	11	2	2	46	449
05:45 PM	66	110	13	21	210	3	6	16	52	77	7	121	1	1	130	44	11	3	2	60	477
<b>Total</b>	<b>250</b>	<b>410</b>	<b>76</b>	<b>62</b>	<b>798</b>	<b>12</b>	<b>29</b>	<b>89</b>	<b>226</b>	<b>356</b>	<b>20</b>	<b>438</b>	<b>4</b>	<b>4</b>	<b>466</b>	<b>136</b>	<b>30</b>	<b>7</b>	<b>7</b>	<b>180</b>	<b>1800</b>
Grand Total	478	788	166	82	1514	25	56	159	424	664	30	788	10	7	835	239	57	16	12	324	3337
Apprch %	31.6	52	11	5.4		3.8	8.4	23.9	63.9		3.6	94.4	1.2	0.8		73.8	17.6	4.9	3.7		
Total %	14.3	23.6	5	2.5	45.4	0.7	1.7	4.8	12.7	19.9	0.9	23.6	0.3	0.2	25	7.2	1.7	0.5	0.4	9.7	

Start Time	Kendall Drive (SR-206) Southbound					40th Street Westbound					Kendall Drive (SR-206) Northbound					Shandin Hills Drive Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	62	106	14	12	194	1	4	23	51	79	3	100	2	1	106	39	5	1	1	46	425
05:15 PM	64	106	27	9	206	5	13	27	53	98	6	109	1	1	117	22	3	1	2	28	449
05:30 PM	58	88	22	20	188	3	6	23	70	102	4	108	0	1	113	31	11	2	2	46	449
05:45 PM	66	110	13	21	210	3	6	16	52	77	7	121	1	1	130	44	11	3	2	60	477
Total Volume	250	410	76	62	798	12	29	89	226	356	20	438	4	4	466	136	30	7	7	180	1800
% App. Total	31.3	51.4	9.5	7.8		3.4	8.1	25	63.5		4.3	94	0.9	0.9		75.6	16.7	3.9	3.9		
PHF	.947	.932	.704	.738	.950	.600	.558	.824	.807	.873	.714	.905	.500	1.000		.773	.682	.583	.875	.750	.943



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

	05:00 PM					04:45 PM					05:00 PM					05:00 PM				
+0 mins.	62	106	14	12	194	3	7	23	61	94	3	100	2	1	106	39	5	1	1	46
+15 mins.	64	106	27	9	206	1	4	23	51	79	6	109	1	1	117	22	3	1	2	28
+30 mins.	58	88	22	20	188	5	13	27	53	98	4	108	0	1	113	31	11	2	2	46
+45 mins.	66	110	13	21	210	3	6	23	70	102	7	121	1	1	130	44	11	3	2	60
Total Volume	250	410	76	62	798	12	30	96	235	373	20	438	4	4	466	136	30	7	7	180
% App. Total	31.3	51.4	9.5	7.8		3.2	8	25.7	63		4.3	94	0.9	0.9		75.6	16.7	3.9	3.9	
PHF	.947	.932	.704	.738	.950	.600	.577	.889	.839	.914	.714	.905	.500	1.000		.773	.682	.583	.875	.750

Lanes, Volumes, Timings  
 3: Shandin Hills Drive & Kendall Drive **PM**

5/18/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	136	30	14	12	29	315	250	410	138	20	438	8
Satd. Flow (prot)	1770	3539	1583	1770	3054	0	1770	3539	1583	1770	3529	0
Flt Permitted	0.950			0.950			0.382			0.494		
Satd. Flow (perm)	1770	3539	1583	1770	3054	0	712	3539	1583	920	3529	0
Satd. Flow (RTOR)			15		342				150		2	
Lane Group Flow (vph)	148	33	15	13	374	0	272	446	150	22	485	0
Turn Type	Prot		Perm	Prot			pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4				6		6	2		
Total Split (s)	20.0	32.0	32.0	8.0	20.0	0.0	22.0	42.0	42.0	8.0	28.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	12.4	22.5	22.5	4.0	7.7		57.9	53.6	53.6	48.0	42.1	
Actuated g/C Ratio	0.14	0.25	0.25	0.04	0.09		0.64	0.60	0.60	0.53	0.47	
v/c Ratio	0.60	0.04	0.04	0.16	0.65		0.46	0.21	0.15	0.04	0.29	
Control Delay	46.6	24.1	11.6	46.2	11.9		10.5	10.8	3.0	8.8	17.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	46.6	24.1	11.6	46.2	11.9		10.5	10.8	3.0	8.8	17.5	
LOS	D	C	B	D	B		B	B	A	A	B	
Approach Delay		40.1			13.1			9.4			17.1	
Approach LOS		D			B			A			B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 15.2  
 Intersection Capacity Utilization 58.1%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 3: Shandin Hills Drive & Kendall Drive

22 s	28 s		8 s	32 s							
8 s	42 s		20 s	20 s							

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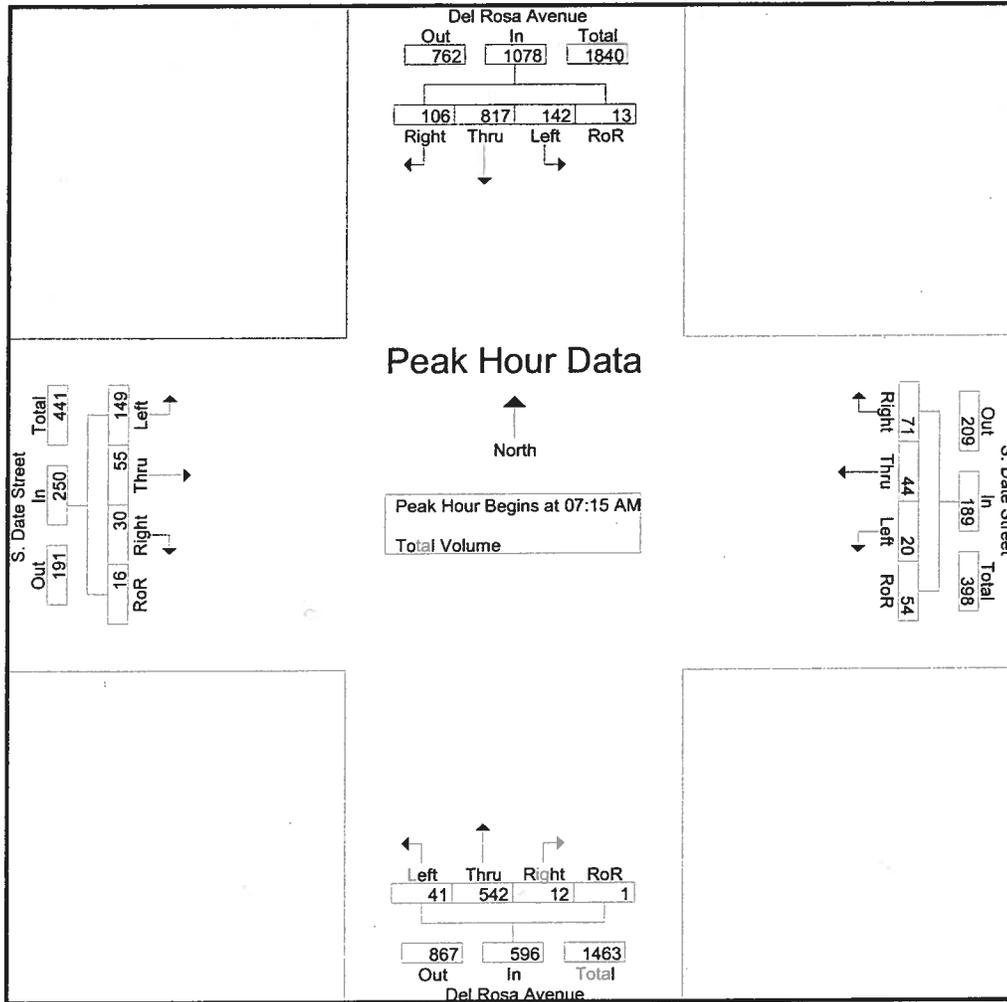
City of San Bernardino  
 N/S: Del Rosa Avenue  
 E/W: South Date Street  
 Weather: Sunny

File Name : SBCDRDAAM  
 Site Code : 11115095  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Del Rosa Avenue Southbound					S. Date Street Westbound					Del Rosa Avenue Northbound					S. Date Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
07:00 AM	17	184	14	0	215	3	7	23	13	46	6	131	2	0	139	42	10	9	2	63	463
07:15 AM	30	225	26	2	283	3	14	17	12	46	6	157	1	0	164	37	18	4	6	65	558
07:30 AM	31	181	35	3	250	8	12	30	17	67	6	150	2	0	158	38	11	9	2	60	535
07:45 AM	35	223	27	3	288	2	11	11	13	37	11	113	3	0	127	32	10	8	3	53	505
Total	113	813	102	8	1036	16	44	81	55	196	29	551	8	0	588	149	49	30	13	241	2061
08:00 AM	46	188	18	5	257	7	7	13	12	39	18	122	6	1	147	42	16	9	5	72	515
08:15 AM	42	190	24	5	261	7	17	19	13	56	8	103	8	2	121	30	11	21	1	63	501
08:30 AM	29	183	15	2	229	7	16	23	12	58	20	131	8	2	161	33	11	16	7	67	515
08:45 AM	46	198	14	2	260	8	21	20	12	61	22	102	15	3	142	33	20	18	6	77	540
Total	163	759	71	14	1007	29	61	75	49	214	68	458	37	8	571	138	58	64	19	279	2071
Grand Total	276	1572	173	22	2043	45	105	156	104	410	97	1009	45	8	1159	287	107	94	32	520	4132
Apprch %	13.5	76.9	8.5	1.1		11	25.6	38	25.4		8.4	87.1	3.9	0.7		55.2	20.6	18.1	6.2		
Total %	6.7	38	4.2	0.5	49.4	1.1	2.5	3.8	2.5	9.9	2.3	24.4	1.1	0.2	28	6.9	2.6	2.3	0.8	12.6	

Start Time	Del Rosa Avenue Southbound					S. Date Street Westbound					Del Rosa Avenue Northbound					S. Date Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	30	225	26	2	283	3	14	17	12	46	6	157	1	0	164	37	18	4	6	65	558
07:30 AM	31	181	35	3	250	8	12	30	17	67	6	150	2	0	158	38	11	9	2	60	535
07:45 AM	35	223	27	3	288	2	11	11	13	37	11	113	3	0	127	32	10	8	3	53	505
08:00 AM	46	188	18	5	257	7	7	13	12	39	18	122	6	1	147	42	16	9	5	72	515
Total Volume	142	817	106	13	1078	20	44	71	54	189	41	542	12	1	596	149	55	30	16	250	2113
% App. Total	13.2	75.8	9.8	1.2		10.6	23.3	37.6	28.6		6.9	90.9	2	0.2		59.6	22	12	6.4		
PHF	.772	.908	.757	.650	.936	.625	.786	.592	.794	.705	.569	.863	.500	.250	.909	.887	.764	.833	.667	.868	.947



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM					08:00 AM					07:15 AM					08:00 AM				
+0 mins.	30	225	26	2	283	7	7	13	12	39	6	157	1	0	164	42	16	9	5	72
+15 mins.	31	181	35	3	250	7	17	19	13	56	6	150	2	0	158	30	11	21	1	63
+30 mins.	35	223	27	3	288	7	16	23	12	58	11	113	3	0	127	33	11	16	7	67
+45 mins.	46	188	18	5	257	8	21	20	12	61	18	122	6	1	147	33	20	18	6	77
Total Volume	142	817	106	13	1078	29	61	75	49	214	41	542	12	1	596	138	58	64	19	279
% App. Total	13.2	75.8	9.8	1.2		13.6	28.5	35	22.9		6.9	90.9	2	0.2		49.5	20.8	22.9	6.8	
PHF	.772	.908	.757	.650	.936	.906	.726	.815	.942	.877	.569	.863	.500	.250	.909	.821	.725	.762	.679	.906

Lanes, Volumes, Timings

3: Date Street & Del Rosa Ave AM

5/16/2011



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Volume (vph)	149	55	46	20	44	125	41	542	13	142	817	119
Satd. Flow (prot)	0	1764	0	0	1688	0	1770	3529	0	1770	3472	0
Flt Permitted		0.590			0.956		0.231			0.345		
Satd. Flow (perm)	0	1072	0	0	1622	0	430	3529	0	643	3472	0
Satd. Flow (RTOR)		13			115			3			20	
Lane Group Flow (vph)	0	272	0	0	206	0	45	603	0	154	1017	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	43.0	43.0	0.0	43.0	43.0	0.0	9.0	43.0	0.0	14.0	48.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)		27.3			27.3		58.0	51.8		64.2	58.3	
Actuated g/C Ratio		0.27			0.27		0.58	0.52		0.64	0.58	
v/c Ratio		0.90			0.39		0.13	0.33		0.30	0.50	
Control Delay		63.7			13.8		9.9	16.4		10.0	15.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		63.7			13.8		9.9	16.4		10.0	15.6	
LOS		E			B		A	B		B	B	
Approach Delay		63.7			13.8			16.0			14.9	
Approach LOS		E			B			B			B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 20.9  
 Intersection Capacity Utilization 68.1%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 3: Date Street & Del Rosa Ave

↙ φ1	↑ φ2	→ φ4
14 s	43 s	43 s
↖ φ5	↓ φ6	↙ φ8
9 s	48 s	43 s

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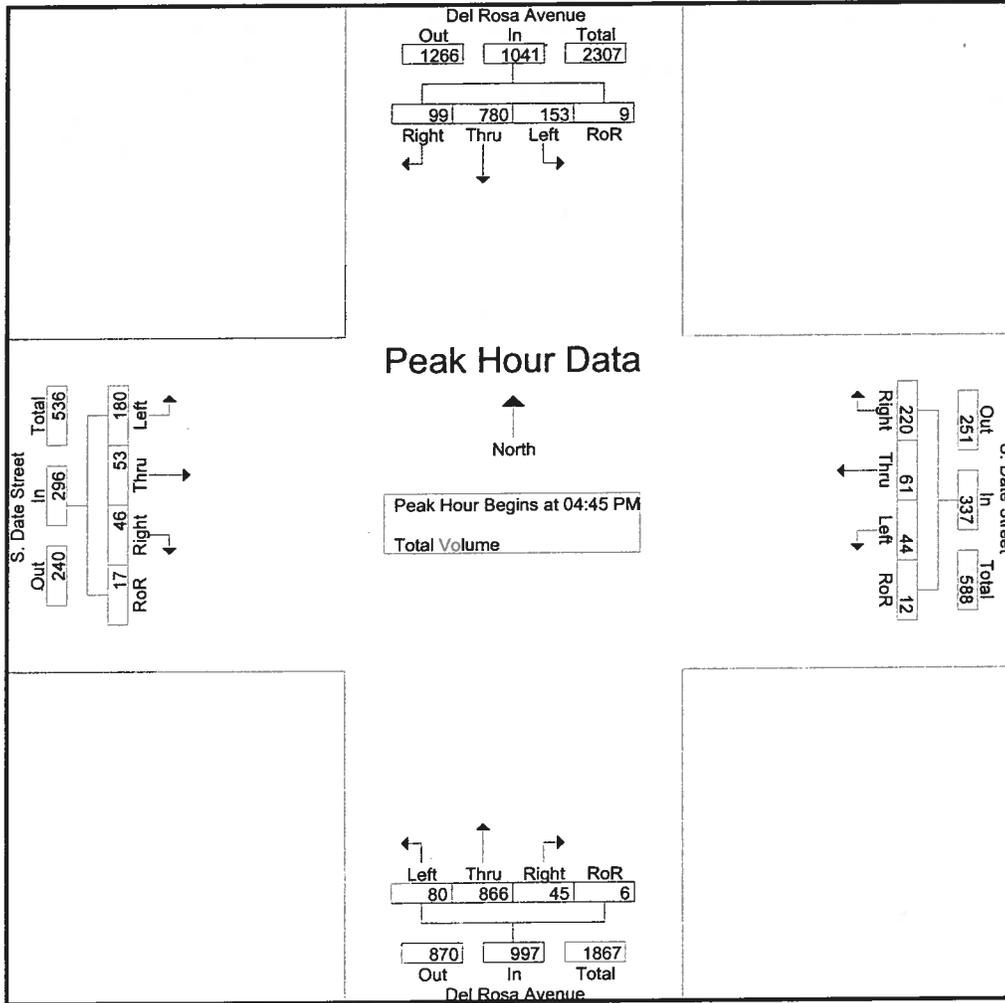
City of San Bernardino  
 N/S: Del Rosa Avenue  
 E/W: South Date Street  
 Weather: Sunny

File Name : SBCDRDAPM  
 Site Code : 11115095  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Del Rosa Avenue Southbound					S. Date Street Westbound					Del Rosa Avenue Northbound					S. Date Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
04:00 PM	39	186	32	3	260	12	20	75	4	111	15	188	14	2	219	45	17	9	3	74	664
04:15 PM	41	165	31	3	240	13	10	51	3	77	16	209	22	3	250	37	15	10	5	67	634
04:30 PM	32	212	29	4	277	16	15	56	4	91	25	200	7	2	234	32	11	9	6	58	660
04:45 PM	53	203	24	3	283	12	19	48	3	82	15	204	12	1	232	43	14	9	1	67	664
Total	165	766	116	13	1060	53	64	230	14	361	71	801	55	8	935	157	57	37	15	266	2622
05:00 PM	35	183	29	0	247	16	19	66	2	103	18	223	13	0	254	38	15	12	5	70	674
05:15 PM	33	194	21	4	252	6	10	56	3	75	24	211	13	3	251	48	15	12	3	78	656
05:30 PM	32	200	25	2	259	10	13	50	4	77	23	228	7	2	260	51	9	13	8	81	677
05:45 PM	36	194	23	3	256	13	11	34	10	68	30	197	5	1	233	40	8	6	7	61	618
Total	136	771	98	9	1014	45	53	206	19	323	95	859	38	6	998	177	47	43	23	290	2625
Grand Total	301	1537	214	22	2074	98	117	436	33	684	166	1660	93	14	1933	334	104	80	38	556	5247
Apprch %	14.5	74.1	10.3	1.1		14.3	17.1	63.7	4.8		8.6	85.9	4.8	0.7		60.1	18.7	14.4	6.8		
Total %	5.7	29.3	4.1	0.4	39.5	1.9	2.2	8.3	0.6	13	3.2	31.6	1.8	0.3	36.8	6.4	2	1.5	0.7	10.6	

Start Time	Del Rosa Avenue Southbound					S. Date Street Westbound					Del Rosa Avenue Northbound					S. Date Street Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. 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	53	203	24	3	283	12	19	48	3	82	15	204	12	1	232	43	14	9	1	67	664
05:00 PM	35	183	29	0	247	16	19	66	2	103	18	223	13	0	254	38	15	12	5	70	674
05:15 PM	33	194	21	4	252	6	10	56	3	75	24	211	13	3	251	48	15	12	3	78	656
05:30 PM	32	200	25	2	259	10	13	50	4	77	23	228	7	2	260	51	9	13	8	81	677
Total Volume	153	780	99	9	1041	44	61	220	12	337	80	866	45	6	997	180	53	46	17	296	2671
% App. Total	14.7	74.9	9.5	0.9		13.1	18.1	65.3	3.6		8	86.9	4.5	0.6		60.8	17.9	15.5	5.7		
PHF	.722	.961	.853	.563	.920	.688	.803	.833	.750	.818	.833	.950	.865	.500	.959	.882	.883	.885	.531	.914	.986



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					05:00 PM					04:45 PM				
+0 mins.	39	186	32	3	260	12	20	75	4	111	18	223	13	0	254	43	14	9	1	67
+15 mins.	41	165	31	3	240	13	10	51	3	77	24	211	13	3	251	38	15	12	5	70
+30 mins.	32	212	29	4	277	16	15	56	4	91	23	228	7	2	260	48	15	12	3	78
+45 mins.	53	203	24	3	283	12	19	48	3	82	30	197	5	1	233	51	9	13	8	81
Total Volume	165	766	116	13	1060	53	64	230	14	361	95	859	38	6	998	180	53	46	17	296
% App. Total	15.6	72.3	10.9	1.2		14.7	17.7	63.7	3.9		9.5	86.1	3.8	0.6		60.8	17.9	15.5	5.7	
PHF	.778	.903	.906	.813	.936	.828	.800	.767	.875	.813	.792	.942	.731	.500	.960	.882	.883	.885	.531	.914

Lanes, Volumes, Timings  
 3: Date Street & Del Rosa Ave

PM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	53	63	44	61	232	80	866	51	153	780	108
Satd. Flow (prot)	0	1754	0	0	1678	0	1770	3511	0	1770	3476	0
Flt Permitted		0.496			0.925		0.214			0.144		
Satd. Flow (perm)	0	897	0	0	1563	0	399	3511	0	268	3476	0
Satd. Flow (RTOR)		16			130			7			19	
Lane Group Flow (vph)	0	322	0	0	366	0	87	996	0	166	965	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	43.0	43.0	0.0	43.0	43.0	0.0	9.0	43.0	0.0	14.0	48.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)		36.0			36.0		48.5	42.9		55.6	48.5	
Actuated g/C Ratio		0.36			0.36		0.48	0.43		0.56	0.48	
v/c Ratio		0.97			0.57		0.32	0.66		0.58	0.57	
Control Delay		72.3			19.2		15.1	26.2		20.1	20.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		72.3			19.2		15.1	26.2		20.1	20.9	
LOS		E			B		B	C		C	C	
Approach Delay		72.3			19.2			25.3			20.8	
Approach LOS		E			B			C			C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 28.0  
 Intersection Capacity Utilization 83.9%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service E

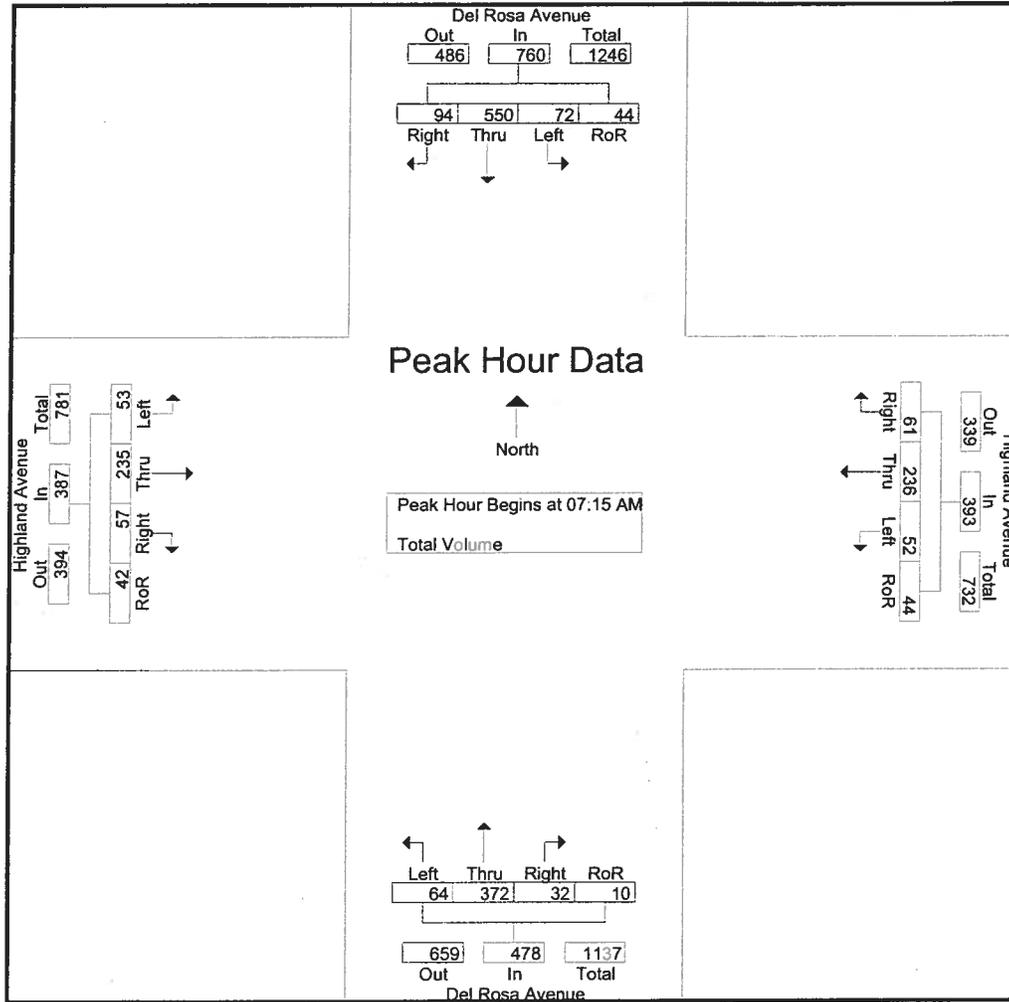
Splits and Phases: 3: Date Street & Del Rosa Ave

ø1	ø2	ø4
14 s	43 s	43 s
ø5	ø6	ø8
9 s	48 s	43 s

Groups Printed- Total Volume

Start Time	Del Rosa Avenue Southbound					Highland Avenue Westbound					Del Rosa Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
07:00 AM	10	129	7	6	152	19	49	9	12	89	18	88	1	1	108	10	40	8	5	63	412
07:15 AM	21	163	12	6	202	21	57	17	13	108	14	100	12	4	130	11	79	10	12	112	552
07:30 AM	15	139	22	11	187	15	72	19	10	116	20	108	9	1	138	12	55	18	8	93	534
07:45 AM	14	134	26	12	186	12	61	17	10	100	17	82	9	3	111	14	53	14	17	98	495
<b>Total</b>	<b>60</b>	<b>565</b>	<b>67</b>	<b>35</b>	<b>727</b>	<b>67</b>	<b>239</b>	<b>62</b>	<b>45</b>	<b>413</b>	<b>69</b>	<b>378</b>	<b>31</b>	<b>9</b>	<b>487</b>	<b>47</b>	<b>227</b>	<b>50</b>	<b>42</b>	<b>366</b>	<b>1993</b>
08:00 AM	22	114	34	15	185	4	46	8	11	69	13	82	2	2	99	16	48	15	5	84	437
08:15 AM	19	94	32	8	153	18	56	9	13	96	15	70	6	6	97	22	51	10	12	95	441
08:30 AM	19	108	34	16	177	13	61	17	11	102	20	91	7	3	121	18	63	5	11	97	497
08:45 AM	28	115	21	18	182	16	68	14	8	106	18	86	6	2	112	20	70	13	11	114	514
<b>Total</b>	<b>88</b>	<b>431</b>	<b>121</b>	<b>57</b>	<b>697</b>	<b>51</b>	<b>231</b>	<b>48</b>	<b>43</b>	<b>373</b>	<b>66</b>	<b>329</b>	<b>21</b>	<b>13</b>	<b>429</b>	<b>76</b>	<b>232</b>	<b>43</b>	<b>39</b>	<b>390</b>	<b>1889</b>
<b>Grand Total</b>	<b>148</b>	<b>996</b>	<b>188</b>	<b>92</b>	<b>1424</b>	<b>118</b>	<b>470</b>	<b>110</b>	<b>88</b>	<b>786</b>	<b>135</b>	<b>707</b>	<b>52</b>	<b>22</b>	<b>916</b>	<b>123</b>	<b>459</b>	<b>93</b>	<b>81</b>	<b>756</b>	<b>3882</b>
<b>Apprch %</b>	<b>10.4</b>	<b>69.9</b>	<b>13.2</b>	<b>6.5</b>		<b>15</b>	<b>59.8</b>	<b>14</b>	<b>11.2</b>		<b>14.7</b>	<b>77.2</b>	<b>5.7</b>	<b>2.4</b>		<b>16.3</b>	<b>60.7</b>	<b>12.3</b>	<b>10.7</b>		
<b>Total %</b>	<b>3.8</b>	<b>25.7</b>	<b>4.8</b>	<b>2.4</b>	<b>36.7</b>	<b>3</b>	<b>12.1</b>	<b>2.8</b>	<b>2.3</b>	<b>20.2</b>	<b>3.5</b>	<b>18.2</b>	<b>1.3</b>	<b>0.6</b>	<b>23.6</b>	<b>3.2</b>	<b>11.8</b>	<b>2.4</b>	<b>2.1</b>	<b>19.5</b>	

Start Time	Del Rosa Avenue Southbound					Highland Avenue Westbound					Del Rosa Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total				
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	21	163	12	6	202	21	57	17	13	108	14	100	12	4	130	11	79	10	12	112	552
07:30 AM	15	139	22	11	187	15	72	19	10	116	20	108	9	1	138	12	55	18	8	93	534
07:45 AM	14	134	26	12	186	12	61	17	10	100	17	82	9	3	111	14	53	14	17	98	495
08:00 AM	22	114	34	15	185	4	46	8	11	69	13	82	2	2	99	16	48	15	5	84	437
<b>Total Volume</b>	<b>72</b>	<b>550</b>	<b>94</b>	<b>44</b>	<b>760</b>	<b>52</b>	<b>236</b>	<b>61</b>	<b>44</b>	<b>393</b>	<b>64</b>	<b>372</b>	<b>32</b>	<b>10</b>	<b>478</b>	<b>53</b>	<b>235</b>	<b>57</b>	<b>42</b>	<b>387</b>	<b>2018</b>
<b>% App. Total</b>	<b>9.5</b>	<b>72.4</b>	<b>12.4</b>	<b>5.8</b>		<b>13.2</b>	<b>60.1</b>	<b>15.5</b>	<b>11.2</b>		<b>13.4</b>	<b>77.8</b>	<b>6.7</b>	<b>2.1</b>		<b>13.7</b>	<b>60.7</b>	<b>14.7</b>	<b>10.9</b>		
<b>PHF</b>	<b>.818</b>	<b>.844</b>	<b>.691</b>	<b>.733</b>	<b>.941</b>	<b>.619</b>	<b>.819</b>	<b>.803</b>	<b>.846</b>	<b>.847</b>	<b>.800</b>	<b>.861</b>	<b>.667</b>	<b>.625</b>	<b>.866</b>	<b>.828</b>	<b>.744</b>	<b>.792</b>	<b>.618</b>	<b>.864</b>	<b>.914</b>



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

	07:15 AM					07:00 AM					07:00 AM					08:00 AM				
+0 mins.	21	163	12	6	202	19	49	9	12	89	18	88	1	1	108	16	48	15	5	84
+15 mins.	15	139	22	11	187	21	57	17	13	108	14	100	12	4	130	22	51	10	12	95
+30 mins.	14	134	26	12	186	15	72	19	10	116	20	108	9	1	138	18	63	5	11	97
+45 mins.	22	114	34	15	185	12	61	17	10	100	17	82	9	3	111	20	70	13	11	114
Total Volume	72	550	94	44	760	67	239	62	45	413	69	378	31	9	487	76	232	43	39	390
% App. Total	9.5	72.4	12.4	5.8		16.2	57.9	15	10.9		14.2	77.6	6.4	1.8		19.5	59.5	11	10	
PHF	.818	.844	.691	.733	.941	.798	.830	.816	.865	.890	.863	.875	.646	.563	.882	.864	.829	.717	.813	.855

Lanes, Volumes, Timings

3: Highland Ave & Del Rosa Ave AM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	235	99	52	236	105	64	372	42	72	550	138
Satd. Flow (prot)	1770	3380	0	1770	3539	1583	1770	3486	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3380	0	1770	3539	1583	1770	3486	0	1770	3539	1583
Satd. Flow (RTOR)		63				114		15				150
Lane Group Flow (vph)	58	363	0	57	257	114	70	450	0	78	598	150
Turn Type	Prot			Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Total Split (s)	11.0	20.0	0.0	23.0	32.0	11.0	16.0	36.0	0.0	11.0	31.0	11.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	6.7	15.1		8.3	14.8	28.2	8.9	43.1		9.3	45.5	56.2
Actuated g/C Ratio	0.07	0.17		0.09	0.16	0.31	0.10	0.48		0.10	0.51	0.62
v/c Ratio	0.44	0.59		0.35	0.44	0.20	0.40	0.27		0.43	0.33	0.14
Control Delay	50.5	32.5		43.4	35.1	4.3	44.0	15.7		44.2	16.3	2.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	50.5	32.5		43.4	35.1	4.3	44.0	15.7		44.2	16.3	2.5
LOS	D	C		D	D	A	D	B		D	B	A
Approach Delay		35.0			28.0			19.5			16.4	
Approach LOS		D			C			B			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 23.0

Intersection LOS: C

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Highland Ave & Del Rosa Ave

11 s	36 s	23 s	20 s
16 s	31 s	11 s	32 s

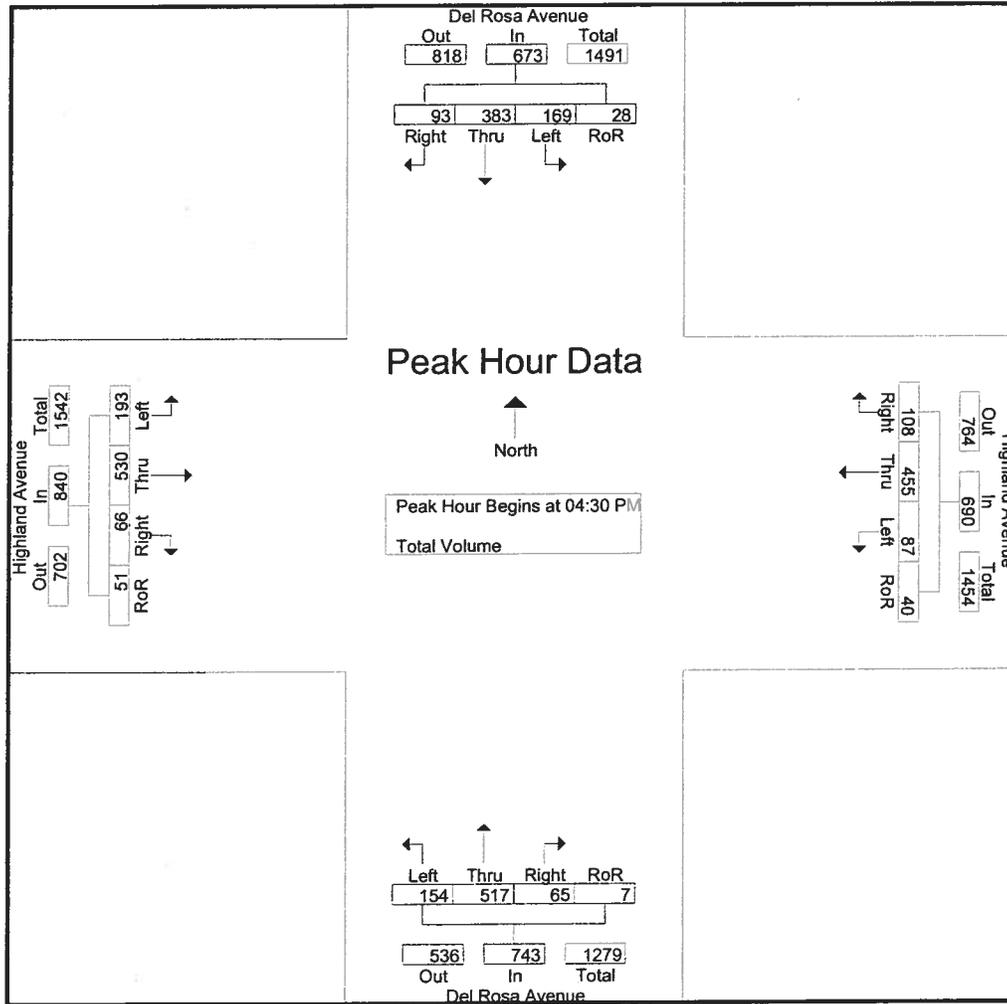
City of San Bernardino  
 N/S: Del Rosa Avenue  
 E/W: Highland Avenue  
 Weather: Sunny

File Name : SBDDRHIPM  
 Site Code : 11115098  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Del Rosa Avenue Southbound					Highland Avenue Westbound					Del Rosa Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	Left	Thru	Right	RoR	App. Total	
04:00 PM	45	96	24	10	175	26	104	25	10	165	48	119	16	1	184	47	146	14	14	221	745
04:15 PM	38	94	24	7	163	16	114	28	7	165	27	123	14	5	169	47	123	27	5	202	699
04:30 PM	50	99	22	5	176	21	105	18	13	157	33	122	15	2	172	52	127	12	14	205	710
04:45 PM	33	118	27	10	188	24	114	27	9	174	39	127	30	2	198	49	123	13	10	195	755
<b>Total</b>	<b>166</b>	<b>407</b>	<b>97</b>	<b>32</b>	<b>702</b>	<b>87</b>	<b>437</b>	<b>98</b>	<b>39</b>	<b>661</b>	<b>147</b>	<b>491</b>	<b>75</b>	<b>10</b>	<b>723</b>	<b>195</b>	<b>519</b>	<b>66</b>	<b>43</b>	<b>823</b>	<b>2909</b>
05:00 PM	48	77	21	5	151	24	121	33	7	185	35	126	10	2	173	57	151	24	14	246	755
05:15 PM	38	89	23	8	158	18	115	30	11	174	47	142	10	1	200	35	129	17	13	194	726
05:30 PM	30	109	12	18	169	25	100	31	13	169	36	94	13	5	148	39	120	11	13	183	669
05:45 PM	47	93	15	4	159	24	100	22	10	156	40	123	14	4	181	40	113	18	17	188	684
<b>Total</b>	<b>163</b>	<b>368</b>	<b>71</b>	<b>35</b>	<b>637</b>	<b>91</b>	<b>436</b>	<b>116</b>	<b>41</b>	<b>684</b>	<b>158</b>	<b>485</b>	<b>47</b>	<b>12</b>	<b>702</b>	<b>171</b>	<b>513</b>	<b>70</b>	<b>57</b>	<b>811</b>	<b>2834</b>
<b>Grand Total</b>	<b>329</b>	<b>775</b>	<b>168</b>	<b>67</b>	<b>1339</b>	<b>178</b>	<b>873</b>	<b>214</b>	<b>80</b>	<b>1345</b>	<b>305</b>	<b>976</b>	<b>122</b>	<b>22</b>	<b>1425</b>	<b>366</b>	<b>1032</b>	<b>136</b>	<b>100</b>	<b>1634</b>	<b>5743</b>
Apprch %	24.6	57.9	12.5	5		13.2	64.9	15.9	5.9		21.4	68.5	8.6	1.5		22.4	63.2	8.3	6.1		
Total %	5.7	13.5	2.9	1.2	23.3	3.1	15.2	3.7	1.4	23.4	5.3	17	2.1	0.4	24.8	6.4	18	2.4	1.7	28.5	

Start Time	Del Rosa Avenue Southbound					Highland Avenue Westbound					Del Rosa Avenue Northbound					Highland Avenue Eastbound					Int. Total
	Left	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. Total	Thru	Right	RoR	App. 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	50	99	22	5	176	21	105	18	13	157	33	122	15	2	172	52	127	12	14	205	710
04:45 PM	33	118	27	10	188	24	114	27	9	174	39	127	30	2	198	49	123	13	10	195	755
05:00 PM	48	77	21	5	151	24	121	33	7	185	35	126	10	2	173	57	151	24	14	246	755
05:15 PM	38	89	23	8	158	18	115	30	11	174	47	142	10	1	200	35	129	17	13	194	726
Total Volume	169	383	93	28	673	87	455	108	40	690	154	517	65	7	743	193	530	66	51	840	2946
% App. Total	25.1	56.9	13.8	4.2		12.6	65.9	15.7	5.8		20.7	69.6	8.7	0.9		23	63.1	7.9	6.1		
PHF	.845	.811	.861	.700	.895	.906	.940	.818	.769	.932	.819	.910	.542	.875	.929	.846	.877	.688	.911	.854	.975



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					04:15 PM				
+0 mins.	45	96	24	10	175	24	114	27	9	174	33	122	15	2	172	47	123	27	5	202
+15 mins.	38	94	24	7	163	24	121	33	7	185	39	127	30	2	198	52	127	12	14	205
+30 mins.	50	99	22	5	176	18	115	30	11	174	35	126	10	2	173	49	123	13	10	195
+45 mins.	33	118	27	10	188	25	100	31	13	169	47	142	10	1	200	57	151	24	14	246
Total Volume	166	407	97	32	702	91	450	121	40	702	154	517	65	7	743	205	524	76	43	848
% App. Total	23.6	58	13.8	4.6		13	64.1	17.2	5.7		20.7	69.6	8.7	0.9		24.2	61.8	9	5.1	
PHF	.830	.862	.898	.800	.934	.910	.930	.917	.769	.949	.819	.910	.542	.875	.929	.899	.868	.704	.768	.862

Lanes, Volumes, Timings  
3: Highland Ave & Del Rosa Ave

PM

5/16/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	193	530	117	87	455	148	154	517	72	169	383	121
Satd. Flow (prot)	1770	3444	0	1770	3539	1583	1770	3476	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3444	0	1770	3539	1583	1770	3476	0	1770	3539	1583
Satd. Flow (RTOR)		25				114		19				132
Lane Group Flow (vph)	210	703	0	95	495	161	167	640	0	184	416	132
Turn Type	Prot			Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Total Split (s)	11.0	20.0	0.0	23.0	32.0	11.0	16.0	36.0	0.0	11.0	31.0	11.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	7.0	25.2		10.2	26.4	39.0	11.4	32.0		8.6	29.2	40.2
Actuated g/C Ratio	0.08	0.28		0.11	0.29	0.43	0.13	0.36		0.10	0.32	0.45
v/c Ratio	1.52	0.71		0.47	0.48	0.21	0.75	0.51		1.08	0.36	0.17
Control Delay	300.0	34.1		44.6	27.5	6.3	58.9	23.9		135.4	25.2	3.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	300.0	34.1		44.6	27.5	6.3	58.9	23.9		135.4	25.2	3.6
LOS	F	C		D	C	A	E	C		F	C	A
Approach Delay		95.2			25.1			31.1			49.0	
Approach LOS		F			C			C			D	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.52

Intersection Signal Delay: 52.1

Intersection Capacity Utilization 62.6%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service B

Splits and Phases: 3: Highland Ave & Del Rosa Ave

ø1	ø2	ø3	ø4
11 s	36 s	23 s	20 s
ø5	ø6	ø7	ø8
16 s	31 s	11 s	32 s

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 Corona, CA 92878  
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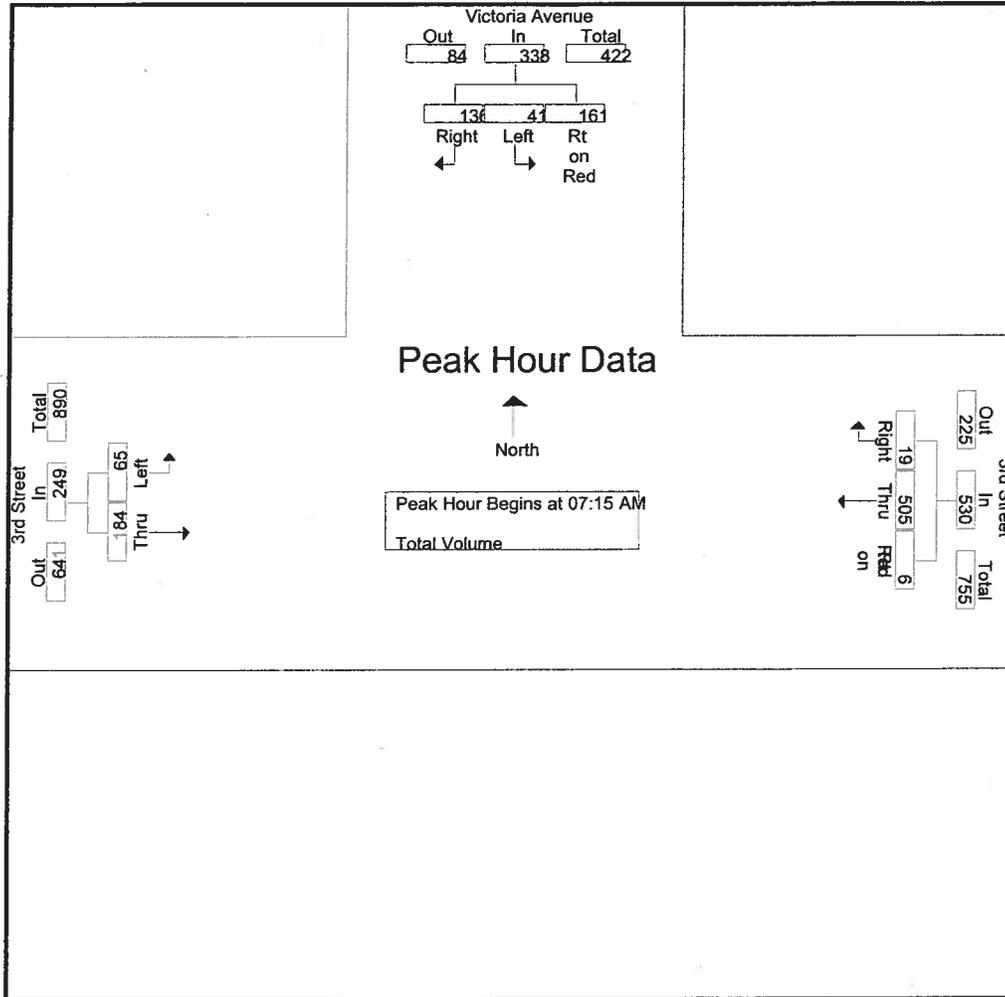
City of San Bernardino  
 N/S: Victoria Avenue  
 E/W: 3rd Street  
 Weather: Sunny

File Name : SBCVI3AM  
 Site Code : 11111009  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Victoria Avenue Southbound				3rd Street Westbound				3rd Street Eastbound			Int. Total
	Left	Right	Rt on Red	App. Total	Thru	Right	Rt on Red	App. Total	Left	Thru	App. Total	
07:00 AM	9	7	34	50	88	9	1	98	7	23	30	178
07:15 AM	11	34	43	88	146	4	2	152	13	50	63	303
07:30 AM	12	38	48	98	116	4	2	122	8	49	57	277
07:45 AM	13	41	36	90	150	7	2	159	20	44	64	313
Total	45	120	161	326	500	24	7	531	48	166	214	1071
08:00 AM	5	23	34	62	93	4	0	97	24	41	65	224
08:15 AM	9	10	38	57	72	1	1	74	18	20	38	169
08:30 AM	8	7	13	28	62	2	2	66	11	38	49	143
08:45 AM	17	20	12	49	51	2	0	53	9	32	41	143
Total	39	60	97	196	278	9	3	290	62	131	193	679
Grand Total	84	180	258	522	778	33	10	821	110	297	407	1750
Apprch %	16.1	34.5	49.4		94.8	4	1.2		27	73		
Total %	4.8	10.3	14.7	29.8	44.5	1.9	0.6	46.9	6.3	17	23.3	

Start Time	Victoria Avenue Southbound				3rd Street Westbound				3rd Street Eastbound			Int. Total
	Left	Right	Rt on Red	App. Total	Thru	Right	Rt on Red	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 07:15 AM												
07:15 AM	11	34	43	88	146	4	2	152	13	50	63	303
07:30 AM	12	38	48	98	116	4	2	122	8	49	57	277
07:45 AM	13	41	36	90	150	7	2	159	20	44	64	313
08:00 AM	5	23	34	62	93	4	0	97	24	41	65	224
Total Volume	41	136	161	338	505	19	6	530	65	184	249	1117
% App. Total	12.1	40.2	47.6		95.3	3.6	1.1		26.1	73.9		
PHF	.788	.829	.839	.862	.842	.679	.750	.833	.677	.920	.958	.892



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:15 AM			
+0 mins.	11	34	43	88	88	9	1	98	13	50	63	
+15 mins.	12	38	48	98	146	4	2	152	8	49	57	
+30 mins.	13	41	36	90	116	4	2	122	20	44	64	
+45 mins.	5	23	34	62	150	7	2	159	24	41	65	
Total Volume	41	136	161	338	500	24	7	531	65	184	249	
% App. Total	12.1	40.2	47.6		94.2	4.5	1.3		26.1	73.9		
PHF	.788	.829	.839	.862	.833	.667	.875	.835	.677	.920	.958	

## WEBSTER

### Webster Based Signal Timing Evaluation Routine

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

#### Existing Traffic with Existing Lane Geometrics

**3RDVICTORIA**

**SB**

**AM Peak Hour**

**Input**

	Eastbound			Westbound			Northbound			Southbound		
	*L*	T	R	L	*T*	R	L	T	R	L	T	*R*
Movement Times												
Movement 1: 10 secs	X	X										
Movement 2: 20 secs		X			X	X						
Movement 3: 20 secs										X		X
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2			2	S				1		2
Unadjusted Volume	65	184			505	25				41		297
Peak Hour Factor (PHF)	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	20				10		20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	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)	65	184		505	25			41	297
Saturation Flow (vph)	1700	3600		3600	Shrd			1700	3400
X or V/C	0.24	0.09		0.41	-			0.07	0.24
Effective green (sec)	8	28		18	-			18	18
Split Time (sec)	10	30		20	-			20	20
Min. Time or Ped. Time (sec)	10	20		20	-			10	20
Delay - 15 min pk (sec/veh)	20	5		13	-			11	12
Level of Service (LOS)	C+	A		B	-			B	B
Average 'Q' (veh/ln)	1	1		2	-			1	1
Design 'Q'- ft/ln	40	40		60	-			40	40
Do Vehicles Clear?	YES	YES		YES	-			YES	YES

**Summary**

<b>Whole Intersection</b>	
Weighted Avg Delay (sec) =	12
Level of Service - LOS =	B
<b>Critical Movements</b>	
Weighted Avg Delay (sec) =	13
Level of Service - LOS =	B
Intersection Capacity Utilization - ICU =	0.31
<b>Required Cycle Length is 50 sec</b>	
<b>Min./Ped. Times Satisfied</b>	

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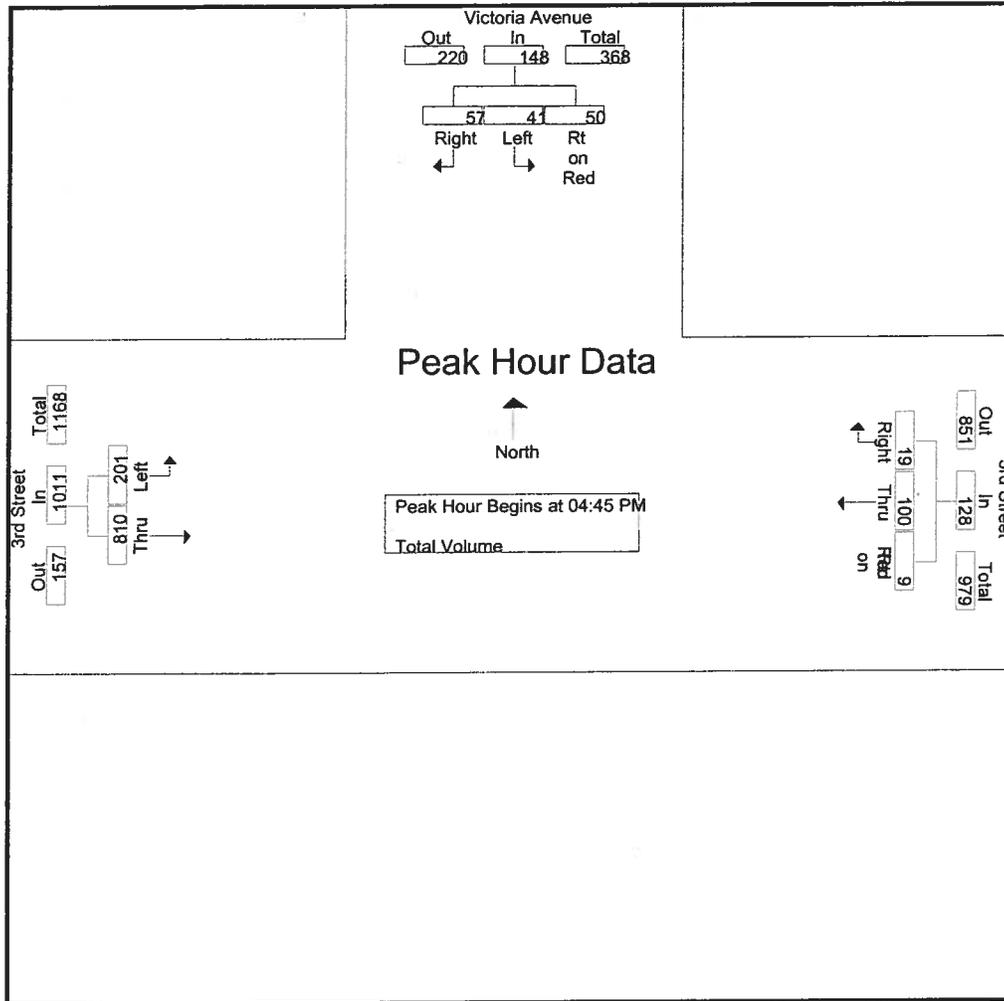
City of San Bernardino  
 N/S: Victoria Avenue  
 E/W: 3rd Street  
 Weather: Sunny

File Name : SBCVI3PM  
 Site Code : 11111009  
 Start Date : 5/4/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Victoria Avenue Southbound				3rd Street Westbound				3rd Street Eastbound			Int. Total
	Left	Right	Rt on Red	App. Total	Thru	Right	Rt on Red	App. Total	Left	Thru	App. Total	
04:00 PM	11	11	10	32	38	7	1	46	28	91	119	197
04:15 PM	9	2	14	25	36	5	3	44	30	111	141	210
04:30 PM	10	11	19	40	16	1	2	19	26	144	170	229
04:45 PM	9	19	18	46	32	5	2	39	41	233	274	359
Total	39	43	61	143	122	18	8	148	125	579	704	995
05:00 PM	11	11	10	32	24	8	2	34	38	178	216	282
05:15 PM	14	21	9	44	26	4	4	34	73	235	308	386
05:30 PM	7	6	13	26	18	2	1	21	49	164	213	260
05:45 PM	11	6	10	27	26	0	0	26	37	148	185	238
Total	43	44	42	129	94	14	7	115	197	725	922	1166
Grand Total	82	87	103	272	216	32	15	263	322	1304	1626	2161
Apprch %	30.1	32	37.9		82.1	12.2	5.7		19.8	80.2		
Total %	3.8	4	4.8	12.6	10	1.5	0.7	12.2	14.9	60.3	75.2	

Start Time	Victoria Avenue Southbound				3rd Street Westbound				3rd Street Eastbound			Int. Total
	Left	Right	Rt on Red	App. Total	Thru	Right	Rt on Red	App. Total	Left	Thru	App. 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	9	19	18	46	32	5	2	39	41	233	274	359
05:00 PM	11	11	10	32	24	8	2	34	38	178	216	282
05:15 PM	14	21	9	44	26	4	4	34	73	235	308	386
05:30 PM	7	6	13	26	18	2	1	21	49	164	213	260
Total Volume	41	57	50	148	100	19	9	128	201	810	1011	1287
% App. Total	27.7	38.5	33.8		78.1	14.8	7		19.9	80.1		
PHF	.732	.679	.694	.804	.781	.594	.563	.821	.688	.862	.821	.834



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		
+0 mins.	10	11	19	40	38	7	1	46	41	233	274
+15 mins.	9	19	18	46	36	5	3	44	38	178	216
+30 mins.	11	11	10	32	16	1	2	19	73	235	308
+45 mins.	14	21	9	44	32	5	2	39	49	164	213
Total Volume	44	62	56	162	122	18	8	148	201	810	1011
% App. Total	27.2	38.3	34.6		82.4	12.2	5.4		19.9	80.1	
PHF	.786	.738	.737	.880	.803	.643	.667	.804	.688	.862	.821

## WEBSTER

### Webster Based Signal Timing Evaluation Routine

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

#### Existing Traffic with Existing Lane Geometrics

**3RDVICTORIA**

**SB**

**PM Peak Hour**

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

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	L	T	R	L	T	R	L	T	*R*
Movement Times												
Movement 1: <b>30 secs</b>	X	X										
Movement 2: <b>22 secs</b>		X			X	X						
Movement 3: <b>20 secs</b>										X		X
Movement 4: <b>0 secs</b>												
Movement 5: <b>0 secs</b>												
Movement 6: <b>0 secs</b>												
# of Lanes (#, S, P)	1	2			2	S				1		2
Unadjusted Volume	201	<b>810</b>			100	28				41		<b>107</b>
Peak Hour Factor (PHF)	1.00	<b>1.00</b>			1.00	1.00				1.00		<b>1.00</b>
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)						Shrd						
Min. Time or Ped. Time	10	<b>20</b>			20	20				10		<b>20</b>
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	<b>1.00</b>			1.00	-				1.00		<b>1.00</b>

	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** **Summary**

Pk. Hr. Vol. (vph)	201	<b>810</b>			100	28			41	<b>107</b>
Saturation Flow (vph)	1700	<b>3600</b>			3600	Shrd			1700	<b>3400</b>
X or V/C	0.30	<b>0.32</b>			0.13	-			0.10	<b>0.13</b>
Effective green (sec)	28	<b>50</b>			20	-			18	<b>18</b>
Split Time (sec)	30	<b>52</b>			22	-			20	<b>20</b>
Min. Time or Ped. Time (sec)	10	<b>20</b>			20	-			10	<b>20</b>
Delay - 15 min pk (sec/veh)	16	<b>5</b>			20	-			21	<b>21</b>
Level of Service (LOS)	B	<b>A</b>			B	-			C+	<b>C+</b>
Average 'Q' (veh/ln)	2	<b>2</b>			1	-			1	<b>1</b>
Design 'Q': ft/ln	60	<b>60</b>			40	-			40	<b>40</b>
Do Vehicles Clear?	YES	<b>YES</b>			YES	-			YES	<b>YES</b>

<b>Whole Intersection</b>	
Weighted Avg Delay (sec) =	10
Level of Service - LOS =	A
<b>Critical Movements</b>	
Weighted Avg Delay (sec) =	7
Level of Service - LOS =	A
Intersection Capacity Utilization - ICU =	0.27
<b>Required Cycle Length is 72 sec</b>	
<b>Min./Ped. Times Satisfied</b>	

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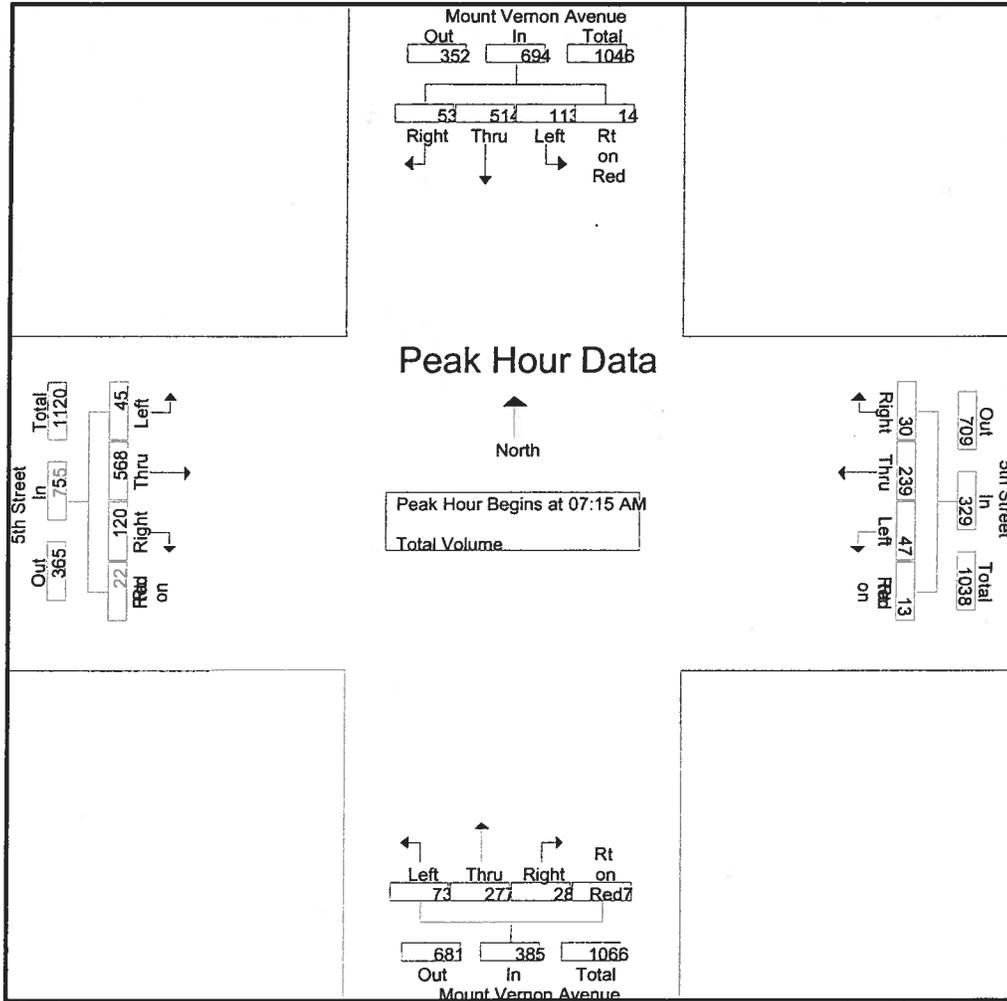
City of San Bernardino  
 N/S: Mount Vernon Avenue  
 E/W: 5th Street  
 Weather: Sunny

File Name : SBCMV5AM  
 Site Code : 11115043  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Mount Vernon Avenue Southbound					5th Street Westbound					Mount Vernon Avenue Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
07:00 AM	15	70	15	4	104	6	29	8	2	45	29	42	6	4	81	6	78	20	6	110	340
07:15 AM	22	114	17	3	156	10	63	8	1	82	17	69	5	1	92	7	149	34	3	193	523
07:30 AM	31	148	12	4	195	14	65	10	2	91	22	71	6	2	101	13	142	32	8	195	582
07:45 AM	35	140	11	2	188	16	50	6	5	77	14	78	9	3	104	15	150	33	6	204	573
<b>Total</b>	<b>103</b>	<b>472</b>	<b>55</b>	<b>13</b>	<b>643</b>	<b>46</b>	<b>207</b>	<b>32</b>	<b>10</b>	<b>295</b>	<b>82</b>	<b>260</b>	<b>26</b>	<b>10</b>	<b>378</b>	<b>41</b>	<b>519</b>	<b>119</b>	<b>23</b>	<b>702</b>	<b>2018</b>
08:00 AM	25	112	13	5	155	7	61	6	5	79	20	59	8	1	88	10	127	21	5	163	485
08:15 AM	32	79	5	6	122	10	44	11	5	70	17	62	8	3	90	12	103	24	5	144	426
08:30 AM	26	91	12	2	131	15	51	13	6	85	19	76	4	1	100	13	103	25	5	146	462
08:45 AM	25	71	9	3	108	10	74	14	4	102	20	49	9	4	82	14	82	31	11	138	430
<b>Total</b>	<b>108</b>	<b>353</b>	<b>39</b>	<b>16</b>	<b>516</b>	<b>42</b>	<b>230</b>	<b>44</b>	<b>20</b>	<b>336</b>	<b>76</b>	<b>246</b>	<b>29</b>	<b>9</b>	<b>360</b>	<b>49</b>	<b>415</b>	<b>101</b>	<b>26</b>	<b>591</b>	<b>1803</b>
Grand Total	211	825	94	29	1159	88	437	76	30	631	158	506	55	19	738	90	934	220	49	1293	3821
Apprch %	18.2	71.2	8.1	2.5		13.9	69.3	12	4.8		21.4	68.6	7.5	2.6		7	72.2	17	3.8		
Total %	5.5	21.6	2.5	0.8	30.3	2.3	11.4	2	0.8	16.5	4.1	13.2	1.4	0.5	19.3	2.4	24.4	5.8	1.3	33.8	

Start Time	Mount Vernon Avenue Southbound					5th Street Westbound					Mount Vernon Avenue Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	22	114	17	3	156	10	63	8	1	82	17	69	5	1	92	7	149	34	3	193	523
07:30 AM	31	148	12	4	195	14	65	10	2	91	22	71	6	2	101	13	142	32	8	195	582
07:45 AM	35	140	11	2	188	16	50	6	5	77	14	78	9	3	104	15	150	33	6	204	573
08:00 AM	25	112	13	5	155	7	61	6	5	79	20	59	8	1	88	10	127	21	5	163	485
Total Volume	113	514	53	14	694	47	239	30	13	329	73	277	28	7	385	45	568	120	22	755	2163
% App. Total	16.3	74.1	7.6	2		14.3	72.6	9.1	4		19	71.9	7.3	1.8		6	75.2	15.9	2.9		
PHF	.807	.868	.779	.700	.890	.734	.919	.750	.650	.904	.830	.888	.778	.583	.925	.750	.947	.882	.688	.925	.929



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM					08:00 AM					07:15 AM					07:15 AM				
+0 mins.	22	114	17	3	156	7	61	6	5	79	17	69	5	1	92	7	149	34	3	193
+15 mins.	31	148	12	4	195	10	44	11	5	70	22	71	6	2	101	13	142	32	8	195
+30 mins.	35	140	11	2	188	15	51	13	6	85	14	78	9	3	104	15	150	33	6	204
+45 mins.	25	112	13	5	155	10	74	14	4	102	20	59	8	1	88	10	127	21	5	163
Total Volume	113	514	53	14	694	42	230	44	20	336	73	277	28	7	385	45	568	120	22	755
% App. Total	16.3	74.1	7.6	2		12.5	68.5	13.1	6		19	71.9	7.3	1.8		6	75.2	15.9	2.9	
PHF	.807	.868	.779	.700	.890	.700	.777	.786	.833	.824	.830	.888	.778	.583	.925	.750	.947	.882	.688	.925

## WEBSTER

### Webster Based Signal Timing Evaluation Routine

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

#### Existing Traffic with Existing Lane Geometrics

5TH and MT Vernon

SB

AM Peak Hour

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

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	T	R	L	*T*	R
Movement 1: 10 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 20 secs		X	X		X	X						
Movement 4: 20 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	S	1	2	S	1	2	S	1	2	S
Unadjusted Volume	45	568	142	47	239	43	73	277	35	113	514	67
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			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	-

	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)	45	568	142	47	239	43	73	277	35	113	514	67
Saturation Flow (vph)	1700	3600	Shrd	1700	3600	Shrd	700	3600	Shrd	1000	3600	Shrd
X or V/C	0.17	0.55	-	0.17	0.22	-	0.29	0.24	-	0.31	0.45	-
Effective green (sec)	8	18	-	8	18	-	18	18	-	18	18	-
Split Time (sec)	10	20	-	10	20	-	20	20	-	20	20	-
Min. Time or Ped. Time (sec)	10	20	-	10	20	-	10	20	-	10	20	-
Delay - 15 min pk (sec/veh)	19	14	-	20	11	-	14	12	-	14	13	-
Level of Service (LOS)	B	B	-	B	B	-	B	B	-	B	B	-
Average 'Q' (veh/ln)	1	3	-	1	1	-	1	1	-	1	3	-
Design 'Q'- ft/ln	40	100	-	40	40	-	40	40	-	40	100	-
Do Vehicles Clear?	YES	YES	-									

Summary	
<b>Whole Intersection</b>	
Weighted Avg Delay (sec) =	14
Level of Service - LOS =	B
<b>Critical Movements</b>	
Weighted Avg Delay (sec) =	14
Level of Service - LOS =	B
Intersection Capacity Utilization - ICU =	0.44
<b>Required Cycle Length Is 50 sec</b>	
<b>Min./Ped. Times Satisfied</b>	

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

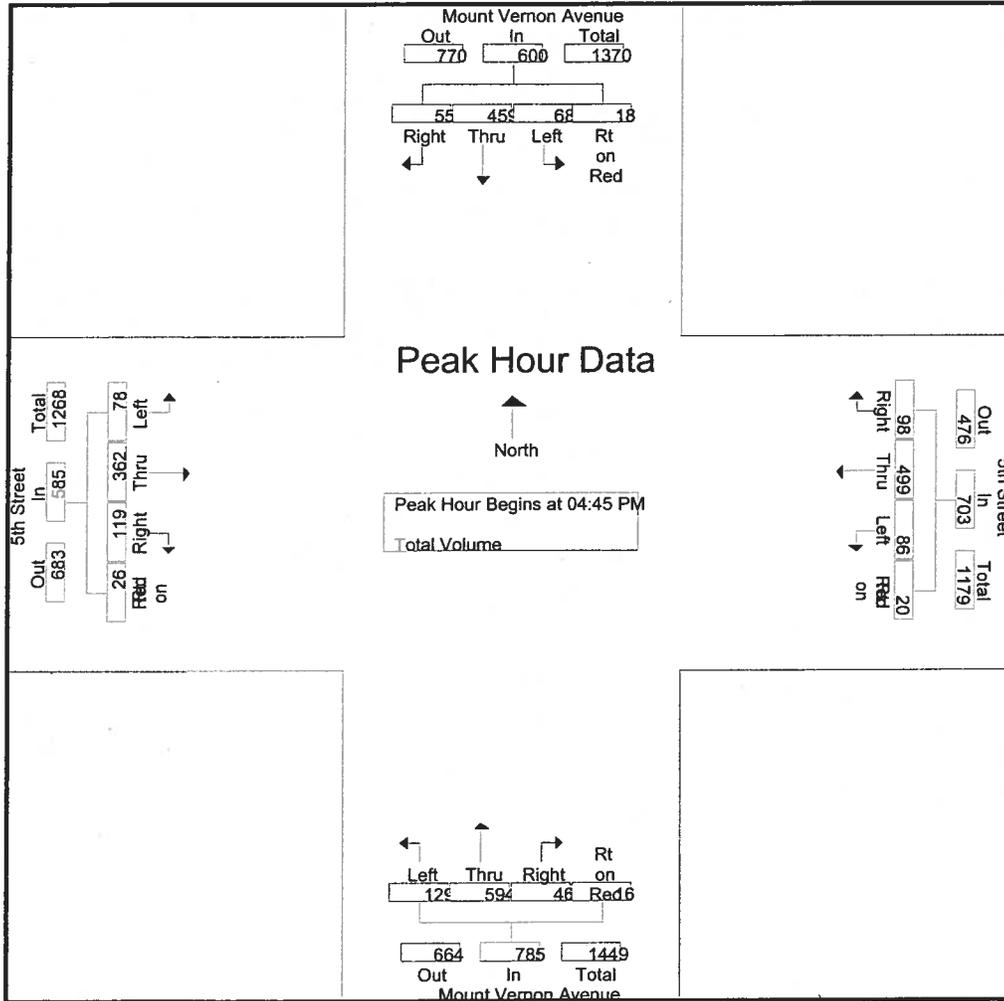
City of San Bernardino  
 N/S: Mount Vernon Avenue  
 E/W: 5th Street  
 Weather: Sunny

File Name : SBCMV5PM  
 Site Code : 11115043  
 Start Date : 5/3/2011  
 Page No : 1

Groups Printed- Total Volume

Start Time	Mount Vernon Avenue Southbound					5th Street Westbound					Mount Vernon Avenue Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	
04:00 PM	19	127	14	4	164	20	114	27	3	164	29	133	11	2	175	21	127	27	5	180	683
04:15 PM	24	100	9	1	134	18	106	15	2	141	26	131	14	1	172	10	91	20	8	129	576
04:30 PM	20	100	12	4	136	20	123	21	3	167	23	116	11	3	153	14	105	33	5	157	613
04:45 PM	26	124	18	2	170	20	111	22	4	157	28	139	11	5	183	23	84	19	6	132	642
<b>Total</b>	<b>89</b>	<b>451</b>	<b>53</b>	<b>11</b>	<b>604</b>	<b>78</b>	<b>454</b>	<b>85</b>	<b>12</b>	<b>629</b>	<b>106</b>	<b>519</b>	<b>47</b>	<b>11</b>	<b>683</b>	<b>68</b>	<b>407</b>	<b>99</b>	<b>24</b>	<b>598</b>	<b>2514</b>
05:00 PM	16	110	12	4	142	17	146	27	2	192	39	153	14	3	209	16	98	37	6	157	700
05:15 PM	15	108	13	3	139	27	140	24	9	200	34	147	15	6	202	22	97	22	8	149	690
05:30 PM	11	117	12	9	149	22	102	25	5	154	28	155	6	2	191	17	83	41	6	147	641
05:45 PM	10	87	13	4	114	14	85	18	8	125	37	135	10	0	182	16	89	22	7	134	555
<b>Total</b>	<b>52</b>	<b>422</b>	<b>50</b>	<b>20</b>	<b>544</b>	<b>80</b>	<b>473</b>	<b>94</b>	<b>24</b>	<b>671</b>	<b>138</b>	<b>590</b>	<b>45</b>	<b>11</b>	<b>784</b>	<b>71</b>	<b>367</b>	<b>122</b>	<b>27</b>	<b>587</b>	<b>2586</b>
<b>Grand Total</b>	<b>141</b>	<b>873</b>	<b>103</b>	<b>31</b>	<b>1148</b>	<b>158</b>	<b>927</b>	<b>179</b>	<b>36</b>	<b>1300</b>	<b>244</b>	<b>1109</b>	<b>92</b>	<b>22</b>	<b>1467</b>	<b>139</b>	<b>774</b>	<b>221</b>	<b>51</b>	<b>1185</b>	<b>5100</b>
<b>Apprch %</b>	<b>12.3</b>	<b>76</b>	<b>9</b>	<b>2.7</b>		<b>12.2</b>	<b>71.3</b>	<b>13.8</b>	<b>2.8</b>		<b>16.6</b>	<b>75.6</b>	<b>6.3</b>	<b>1.5</b>		<b>11.7</b>	<b>65.3</b>	<b>18.6</b>	<b>4.3</b>		
<b>Total %</b>	<b>2.8</b>	<b>17.1</b>	<b>2</b>	<b>0.6</b>	<b>22.5</b>	<b>3.1</b>	<b>18.2</b>	<b>3.5</b>	<b>0.7</b>	<b>25.5</b>	<b>4.8</b>	<b>21.7</b>	<b>1.8</b>	<b>0.4</b>	<b>28.8</b>	<b>2.7</b>	<b>15.2</b>	<b>4.3</b>	<b>1</b>	<b>23.2</b>	

Start Time	Mount Vernon Avenue Southbound					5th Street Westbound					Mount Vernon Avenue Northbound					5th Street Eastbound					Int. Total
	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. Total	Left	Thru	Right	Rt on Red	App. 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	26	124	18	2	170	20	111	22	4	157	28	139	11	5	183	23	84	19	6	132	642
05:00 PM	16	110	12	4	142	17	146	27	2	192	39	153	14	3	209	16	98	37	6	157	700
05:15 PM	15	108	13	3	139	27	140	24	9	200	34	147	15	6	202	22	97	22	8	149	690
05:30 PM	11	117	12	9	149	22	102	25	5	154	28	155	6	2	191	17	83	41	6	147	641
<b>Total Volume</b>	<b>68</b>	<b>459</b>	<b>55</b>	<b>18</b>	<b>600</b>	<b>86</b>	<b>499</b>	<b>98</b>	<b>20</b>	<b>703</b>	<b>129</b>	<b>594</b>	<b>46</b>	<b>16</b>	<b>785</b>	<b>78</b>	<b>362</b>	<b>119</b>	<b>26</b>	<b>585</b>	<b>2673</b>
<b>% App. Total</b>	<b>11.3</b>	<b>76.5</b>	<b>9.2</b>	<b>3</b>		<b>12.2</b>	<b>71</b>	<b>13.9</b>	<b>2.8</b>		<b>16.4</b>	<b>75.7</b>	<b>5.9</b>	<b>2</b>		<b>13.3</b>	<b>61.9</b>	<b>20.3</b>	<b>4.4</b>		
<b>PHF</b>	<b>.654</b>	<b>.925</b>	<b>.764</b>	<b>.500</b>	<b>.882</b>	<b>.796</b>	<b>.854</b>	<b>.907</b>	<b>.556</b>	<b>.879</b>	<b>.827</b>	<b>.958</b>	<b>.767</b>	<b>.667</b>	<b>.939</b>	<b>.848</b>	<b>.923</b>	<b>.726</b>	<b>.813</b>	<b>.932</b>	<b>.955</b>



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					04:30 PM					04:45 PM					04:00 PM				
+0 mins.	19	127	14	4	164	20	123	21	3	167	28	139	11	5	183	21	127	27	5	180
+15 mins.	24	100	9	1	134	20	111	22	4	157	39	153	14	3	209	10	91	20	8	129
+30 mins.	20	100	12	4	136	17	146	27	2	192	34	147	15	6	202	14	105	33	5	157
+45 mins.	26	124	18	2	170	27	140	24	9	200	28	155	6	2	191	23	84	19	6	132
Total Volume	89	451	53	11	604	84	520	94	18	716	129	594	46	16	785	68	407	99	24	598
% App. Total	14.7	74.7	8.8	1.8		11.7	72.6	13.1	2.5		16.4	75.7	5.9	2		11.4	68.1	16.6	4	
PHF	.856	.888	.736	.688	.888	.778	.890	.870	.500	.895	.827	.958	.767	.667	.939	.739	.801	.750	.750	.831

## WEBSTER

### Webster Based Signal Timing Evaluation Routine

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

#### Existing Traffic with Existing Lane Geometrics

5TH and MT Vernon

SB

PM Peak Hour

**Input**

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	*L*	T	R	L	*T*	R	L	*T*	R	L	T	R
Movement 1: 10 secs	X			X								
Movement 2: 1 secs				X	X	X						
Movement 3: 20 secs		X	X		X	X						
Movement 4: 20 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	S	1	2	S	1	2	S	1	2	S
Unadjusted Volume	78	362	145	86	499	118	129	594	62	68	459	73
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			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	-

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)	78	362	145	86	499	118	129	594	62	68	459	73
Saturation Flow (vph)	1700	3600	Shrd	1700	3600	Shrd	800	3600	Shrd	700	3600	Shrd
X or V/C	0.29	0.40	-	0.29	0.46	-	0.46	0.52	-	0.28	0.42	-
Effective green (sec)	8	18	-	9	19	-	18	18	-	18	18	-
Split Time (sec)	10	20	-	11	21	-	20	20	-	20	20	-
Min. Time or Ped. Time (sec)	10	20	-	10	20	-	10	20	-	10	20	-
Delay - 15 min pk (sec/veh)	22	13	-	21	13	-	18	15	-	15	14	-
Level of Service (LOS)	C+	B	-	C+	B	-	B	B	-	B	B	-
Average 'Q' (veh/ln)	1	2	-	1	3	-	1	3	-	1	2	-
Design 'Q'- ft/ln	40	60	-	40	100	-	40	100	-	40	60	-
Do Vehicles Clear?	YES	YES	-									

**Summary**

<b>Whole Intersection</b>	
Weighted Avg Delay (sec) =	14
Level of Service - LOS =	B
<b>Critical Movements</b>	
Weighted Avg Delay (sec) =	14
Level of Service - LOS =	B
Intersection Capacity Utilization - ICU =	0.45
<b>Required Cycle Length is 51 sec</b>	
<b>Min./Ped. Times Satisfied</b>	