WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

Mill St. at Rancho Ave. **City of SBD** **AM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	L	T	R	L	*T*	R	L	T	R
Movement 1: 20 secs	X	X	X	X	X	X						
Movement 2: 20 secs							X	X	X	X	X	X
Movement 3: 0 secs												
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	2	S	1	2	S	1	2	S
Unadjusted Volume	74	310	46	109	269	119	72	236	92	62	224	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
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Parameter Values (using default set 'Webster')

	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)		1800
Sat Flow (2 Left lanes, vphg)		3500
Sat Flow (1 Thru lane, vphg)		1900
Sat Flow (1 Right lane, vphg)		1800
Vehicle Length (feet)		20

Output

		***						***				
Pk. Hr. Vol. (vph)	74	310	46	109	269	119	72	236	92	62	224	73
Saturation Flow (vph)	900	1900	1800	1000	3800	Shrd	1000	3800	Shrd	1000	3800	Shrd
X or V/C	0.18	0.36	0.06	0.24	0.23	-	0.16	0.19	-	0.14	0.17	-
Effective green (sec)	18	18	18	18	18	-	18	18	-	18	18	-
Split Time (sec)	20	20	20	20	20	-	20	20	-	20	20	-
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	-	10	20	-
Delay - 15 min pk (sec/veh)	8	8	6	8	7	-	7	7	-	7	7	-
Level of Service (LOS)	A	A	A	A	A	-	A	A	-	A	A	-
Average 'Q' (veh/ln)	1	2	1	1	1	-	1	1	-	1	1	-
Design 'Q'- ft/ln	40	60	40	40	40	-	40	40	-	40	40	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary

Whole Intersection

Weighted Avg Delay (sec) = 7
Level of Service - LOS = A

Critical Movements

Weighted Avg Delay (sec) = 8
Level of Service - LOS = A
Intersection Capacity Utilization - ICU = 0.28

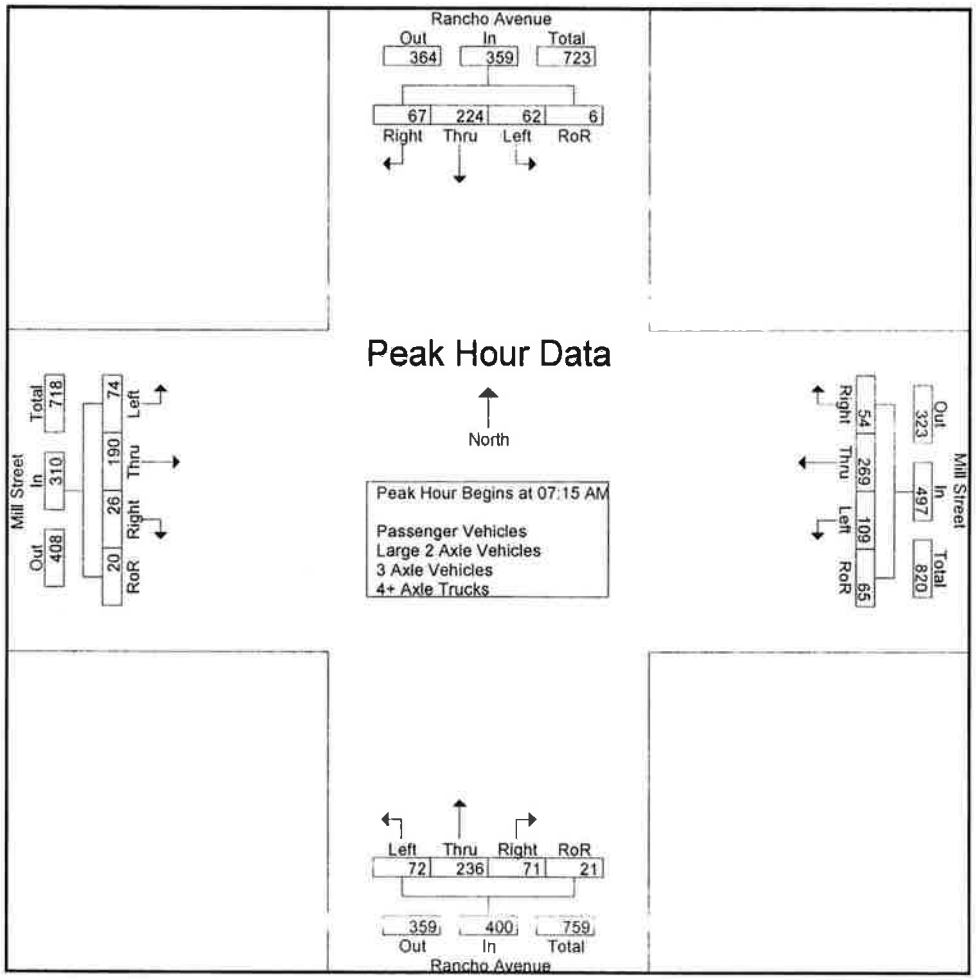
Required Cycle Length is 40 sec

Min./Ped. Times Satisfied

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Rancho Avenue
E/W: Mill Street
Weather: Sunny

File Name : SBCRAMIAM
Site Code : 9153075
Start Date : 6/10/2009
Page No : 2



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

Peak Hour for Each Approach Begins at:

	07:15 AM					07:15 AM					07:15 AM					07:15 AM				
+0 mins.	18	46	11	1	76	25	54	15	17	111	17	60	21	6	104	18	**60**	5	**9**	**92**
+15 mins.	15	**71**	**27**	1	**114**	30	82	14	16	142	**26**	63	**27**	**11**	**127**	10	52	**8**	2	72
+30 mins.	10	61	20	**2**	93	**37**	**84**	**17**	11	**149**	15	**67**	12	1	95	19	40	8	3	70
+45 mins.	**19**	46	9	2	76	17	49	8	**21**	95	14	46	11	3	74	**27**	38	5	6	76
Total Volume	62	224	67	6	359	109	269	54	65	497	72	236	71	21	400	74	190	26	20	310
% App. Total	17.3	62.4	18.7	1.7		21.9	54.1	10.9	13.1		18	59	17.8	5.2		23.9	61.3	8.4	6.5	
PHF	.816	.789	.620	.750	.787	.736	.801	.794	.774	.834	.692	.881	.657	.477	.787	.685	.792	.813	.556	.842

WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

Mill St. at Rancho Ave. **City of San Bernardino** **PM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	L	T	R	L	T	R	L	*T*	R
Movement 1: 20 secs	X	X	X	X	X	X						
Movement 2: 20 secs							X	X	X	X	X	X
Movement 3: 0 secs												
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	2	S	1	2	S	1	2	S
Unadjusted Volume	99	274	89	73	280	89	81	270	47	104	334	96
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
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Parameter Values

	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)	3400	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)	99	274	89	73	280	89	81	270	47	104	334	96
Saturation Flow (vph)	1000	1800	1800	1000	3600	Shrd	900	3600	Shrd	1000	3600	Shrd
X or V/C	0.22	0.34	0.11	0.16	0.23	-	0.20	0.20	-	0.23	0.27	-
Effective green (sec)	18	18	18	18	18	-	18	18	-	18	18	-
Split Time (sec)	20	20	20	20	20	-	20	20	-	20	20	-
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	-	10	20	-
Delay - 15 min pk (sec/veh)	8	8	7	7	7	-	8	7	-	8	7	-
Level of Service (LOS)	A	A	A	A	A	-	A	A	-	A	A	-
Average 'Q' (veh/ln)	1	2	1	1	1	-	1	1	-	1	1	-
Design 'Q'- ft/ln	40	60	40	40	40	-	40	40	-	40	40	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary

Whole Intersection

Weighted Avg Delay (sec) = 7
Level of Service - LOS = A

Critical Movements

Weighted Avg Delay (sec) = 8
Level of Service - LOS = A
Intersection Capacity Utilization - ICU = 0.30

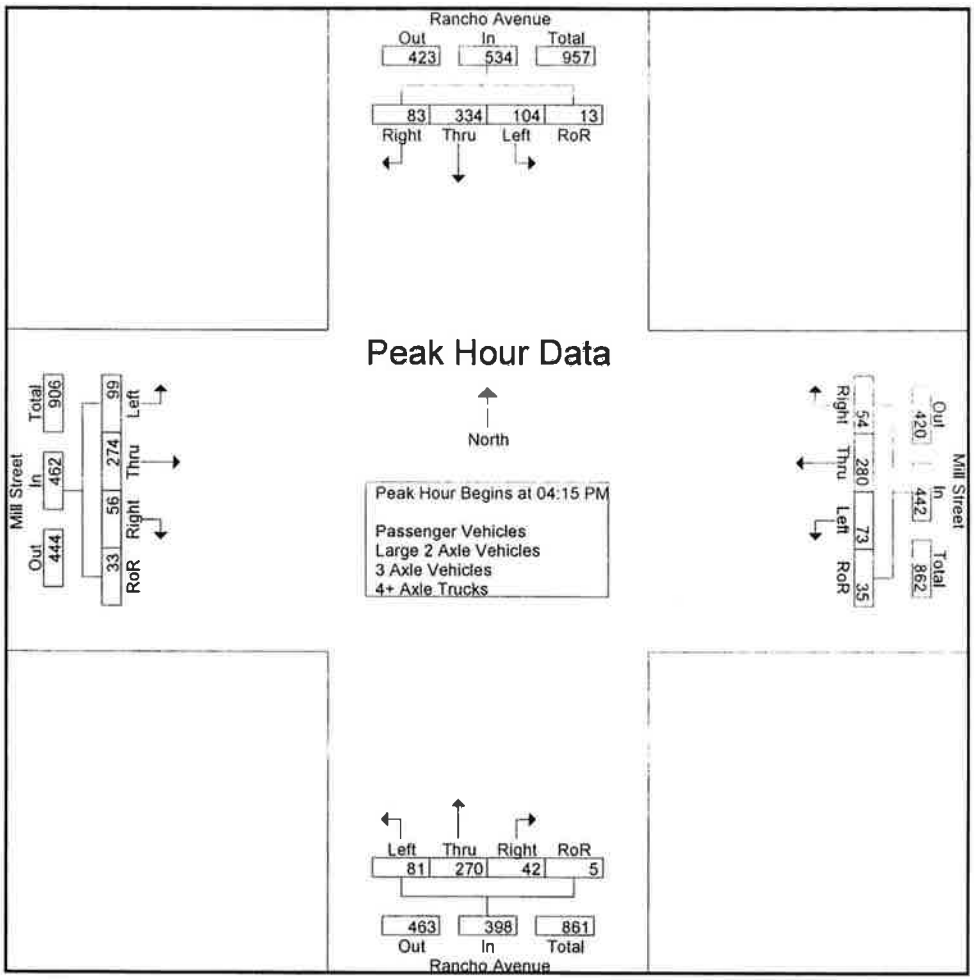
Required Cycle Length is 40 sec

Min./Ped. Times Satisfied

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of San Bernardino
N/S: Rancho Avenue
E/W: Mill Street
Weather: Sunny

File Name : SBCRAMIPM
Site Code : 9153075
Start Date : 6/10/2009
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:

	04:15 PM					05:00 PM					04:15 PM					04:30 PM				
+0 mins.	27	84	**25**	3	**139**	**25**	68	9	9	111	**24**	70	**11**	1	106	22	71	12	**11**	**116**
+15 mins.	**31**	74	22	**5**	132	14	64	**23**	11	112	24	56	10	1	91	26	64	**20**	5	115
+30 mins.	21	**96**	19	0	136	23	**82**	17	10	**132**	16	62	11	**2**	91	**28**	72	8	8	116
+45 mins.	25	80	17	5	127	19	68	16	**15**	118	17	**82**	10	1	**110**	15	**77**	18	6	116
Total Volume	104	334	83	13	534	81	282	65	45	473	81	270	42	5	398	91	284	58	30	463
% App. Total	19.5	62.5	15.5	2.4		17.1	59.6	13.7	9.5		20.4	67.8	10.6	1.3		19.7	61.3	12.5	6.5	
PHF	.839	.870	.830	.650	.960	.810	.860	.707	.750	.896	.844	.823	.955	.625	.905	.813	.922	.725	.682	.998