WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

3rd @ Sterling **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: 10 secs	X	X										
Movement 2: 29 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	83	169			747	11				24		237
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)	83	169			747	11				24		237
Saturation Flow (vph)	1700	3600			3600	Shrd				1700		3400
X or V/C	0.36	0.07			0.46	-				0.05		0.23
Effective green (sec)	8	37			27	-				18		18
Split Time (sec)	10	39			29	-				20		20
Min. Time or Ped. Time (sec)	10	20			20	-				10		20
Delay - 15 min pk (sec/veh)	28	4			12	-				15		16
Level of Service (LOS)	C	A			B	-				B		B
Average 'Q' (veh/ln)	1	1			3	-				1		1
Design 'Q'- ft/ln	40	40			100	-				40		40
Do Vehicles Clear?	YES	YES			YES	-				YES		YES

Summary

Whole Intersection

Weighted Avg Delay (sec) = 13
Level of Service - LOS = B

Critical Movements

Weighted Avg Delay (sec) = 14
Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.37

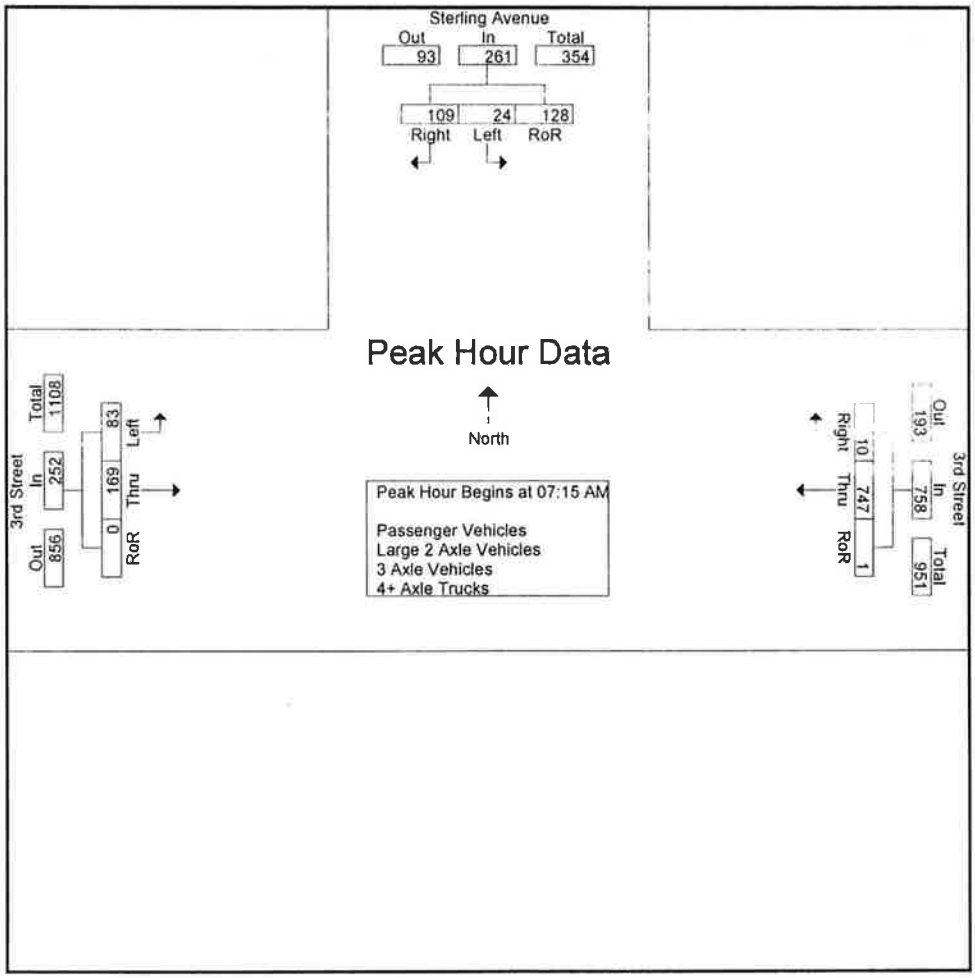
Required Cycle Length is 59 sec

Min./Ped. Times Satisfied

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

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

File Name : SBCST3AM
Site Code : 91531963
Start Date : 6/9/2009
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				07:45 AM			
+0 mins.	**11**	**45**	25	**81**	194	**3**	0	197	22	40	0	62
+15 mins.	9	29	**36**	74	186	3	**1**	190	17	**59**	0	76
+30 mins.	3	32	31	66	**227**	1	0	**228**	26	50	0	76
+45 mins.	1	3	36	40	140	3	0	143	**32**	55	0	**87**
Total Volume	24	109	128	261	747	10	1	758	97	204	0	301
% App. Total	9.2	41.8	49		98.5	1.3	0.1		32.2	67.8	0	
PHF	.545	.606	.889	.806	.823	.833	.250	.831	.758	.864	.000	.865

WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

3rd @ Sterling **City of SBD** **PM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	L	T	R	L	T	R	L	T	*R*
Movement 1: **33** secs	X	X										
Movement 2: **12** 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	292	**912**			229	29				29		**154**
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 '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)	292	**912**			229	29				29		**154**
Saturation Flow (vph)	1800	**3800**			3800	Shrd				1800		**3400**
X or V/C	0.34	**0.36**			0.44	-				0.06		**0.16**
Effective green (sec)	31	**43**			10	-				18		**18**
Split Time (sec)	33	**45**			12	-				20		**20**
Min. Time or Ped. Time (sec)	10	**20**			20	-				10		**20**
Delay - 15 min pk (sec/veh)	12	**5**			27	-				17		**18**
Level of Service (LOS)	B	**A**			C	-				B		**B**
Average 'Q' (veh/ln)	3	**3**			2	-				1		**1**
Design 'Q'- ft/ln	100	**100**			60	-				40		**40**
Do Vehicles Clear?	YES	**YES**			YES	-				YES		**YES**

Summary

Whole Intersection

Weighted Avg Delay (sec) = 11
Level of Service - LOS = B

Critical Movements

Weighted Avg Delay (sec) = 7
Level of Service - LOS = A
Intersection Capacity Utilization - ICU = 0.30

Required Cycle Length Is 65 sec

Min./Ped. Times May Not Be Satisfied

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

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

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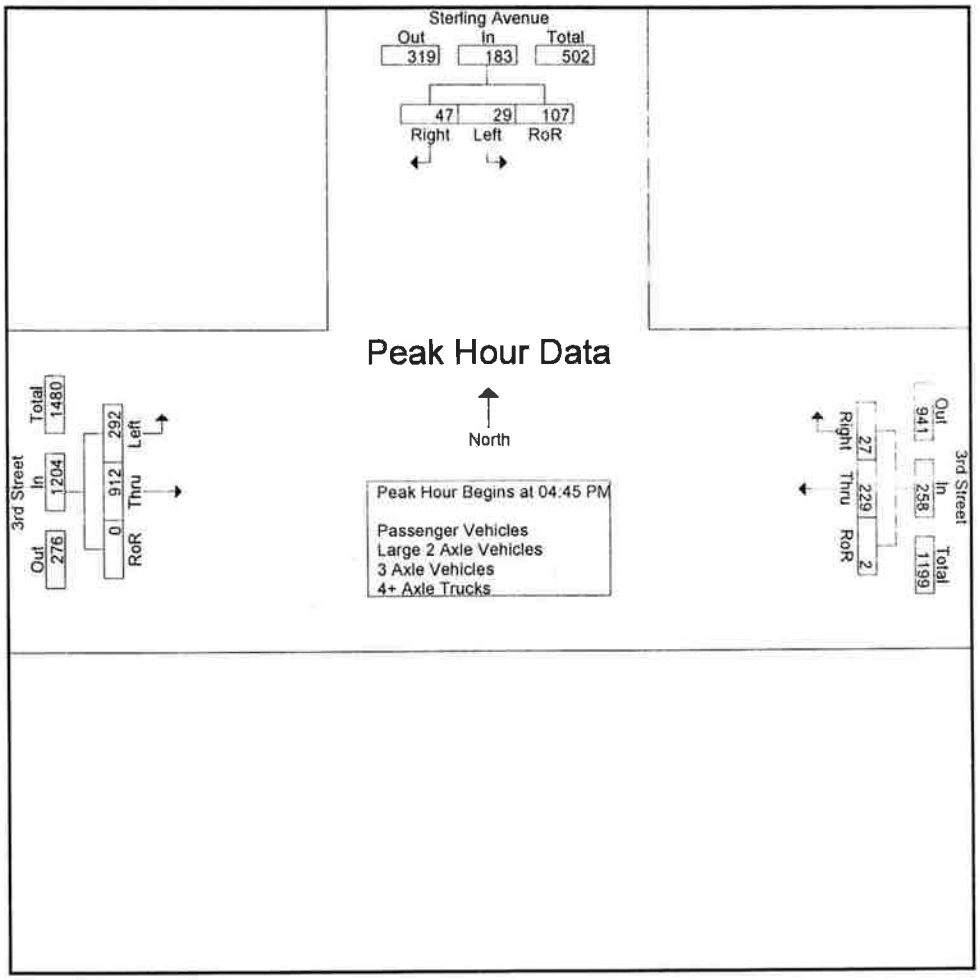

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:45 PM			
+0 mins.	7	21	25	53	66	3	**2**	71	60	176	0	236
+15 mins.	7	10	**32**	49	58	**8**	0	66	73	**309**	0	**382**
+30 mins.	8	8	18	34	**68**	6	0	**74**	**83**	202	0	285
+45 mins.	**9**	**24**	30	**63**	62	7	0	69	76	225	0	301
Total Volume	31	63	105	199	254	24	2	280	292	912	0	1204
% App. Total	15.6	31.7	52.8		90.7	8.6	0.7		24.3	75.7	0	
PHF	.861	.656	.820	.790	.934	.750	.250	.946	.880	.738	.000	.788