WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

Redlands Blvd @ Hunts Lane **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			
Movement 3: 20 secs						X				**X**	X	X
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	**1**	1	1	S	**2**	**1**	**1**	2	S
Unadjusted Volume	13	10	5	**185**	52	356	6	**348**	105	**100**	121	21
Peak Hour Factor (PHF)	1.00	1.00	1.00	**1.00**	1.00	1.00	1.00	**1.00**	1.00	**1.00**	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)												Shrd
Min. Time or Ped. Time	10	20	20	**10**	20	20	10	**20**	20	**10**	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	**1.00**	1.00	1.00	-	**1.00**	1.00	**1.00**	1.00	-

Parameter Values (using default set '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)	13	10	10	**185**	52	356	10	**348**	105	**100**	121	21
Saturation Flow (vph)	1000	1900	1800	**1400**	1900	1800	Shrd	**3800**	1800	**1800**	3800	Shrd
X or V/C	0.04	0.02	0.02	**0.44**	0.09	0.31	-	**0.31**	0.19	**0.19**	0.12	-
Effective green (sec)	18	18	18	**18**	18	38	-	**18**	18	**18**	18	-
Split Time (sec)	20	20	20	**20**	20	40	-	**20**	20	**20**	20	-
Min. Time or Ped. Time (sec)	10	20	20	**10**	20	20	-	**20**	20	**10**	20	-
Delay - 15 min pk (sec/veh)	15	15	15	**20**	15	6	-	**17**	16	**16**	15	-
Level of Service (LOS)	B	B	B	**C+**	B	A	-	**B**	B	**B**	B	-
Average 'Q' (veh/ln)	1	1	1	**2**	1	2	-	**2**	1	**1**	1	-
Design 'Q'- ft/ln	40	40	40	**60**	40	60	-	**60**	40	**40**	40	-
Do Vehicles Clear?	YES	YES	YES	**YES**	YES	YES	-	**YES**	YES	**YES**	YES	-

Summary

Whole Intersection

Weighted Avg Delay (sec) = 14
Level of Service - LOS = B

Critical Movements

Weighted Avg Delay (sec) = 18
Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.31

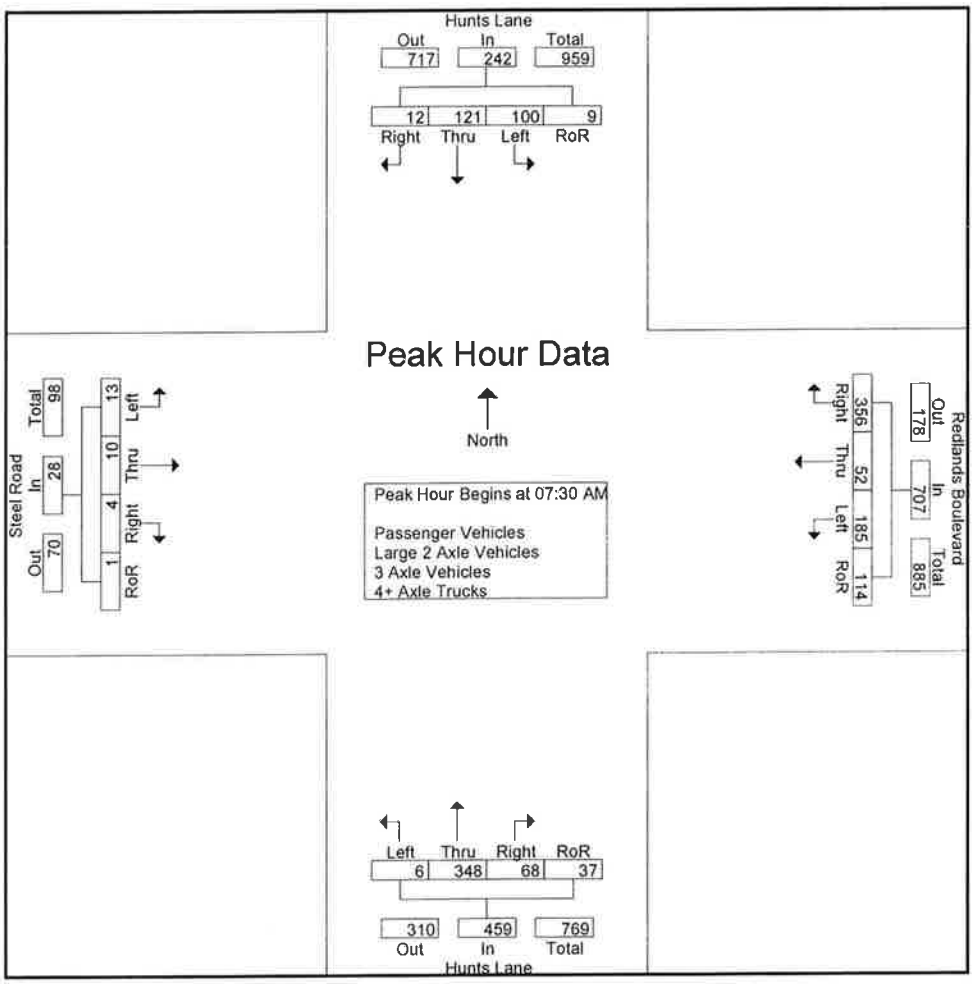
Required Cycle Length is 60 sec

Min./Ped. Times Satisfied

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

City of San Bernardino
N/S: Hunts Lane
E/W: Steel Road/Redlands Boulevard
Weather: Sunny

File Name : SBCHUREAM
Site Code : 9153022
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:

	07:30 AM					07:30 AM					07:15 AM					08:00 AM				
+0 mins.	**29**	20	0	4	53	42	**18**	**105**	26	**191**	1	79	13	6	99	3	3	1	0	7
+15 mins.	22	**40**	3	3	**68**	49	6	97	**38**	190	1	101	21	6	129	6	2	**2**	**1**	11
+30 mins.	26	35	3	2	66	**58**	11	93	27	189	**2**	**104**	**22**	**11**	**139**	5	**10**	2	0	**17**
+45 mins.	23	26	**6**	0	55	36	17	61	23	137	2	102	17	6	127	**7**	4	0	0	11
Total Volume	100	121	12	9	242	185	52	356	114	707	6	386	73	29	494	21	19	5	1	46
% App. Total	41.3	50	5	3.7		26.2	7.4	50.4	16.1		1.2	78.1	14.8	5.9		45.7	41.3	10.9	2.2	
PHF	.862	.756	.500	.563	.890	.797	.722	.848	.750	.925	.750	.928	.830	.659	.888	.750	.475	.625	.250	.676

WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

2009 CMP Data

Redlands Blvd @ Hunts Lane **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: 23 secs	X	X	X	X	X	X						
Movement 2: 20 secs							X	X	X			
Movement 3: 20 secs						X				X	X	X
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	1	1	S	2	1	1	2	S
Unadjusted Volume	28	30	10	287	46	427	1	293	121	194	395	10
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)												Shrd
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	-

Parameter Values (using default set '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)	28	30	10	287	46	427	10	293	121	194	395	10
Saturation Flow (vph)	900	1900	1800	1400	1900	1800	Shrd	3800	1800	1800	3800	Shrd
X or V/C	0.09	0.05	0.02	0.62	0.07	0.36	-	0.28	0.24	0.38	0.37	-
Effective green (sec)	21	21	21	21	21	41	-	18	18	18	18	-
Split Time (sec)	23	23	23	23	23	43	-	20	20	20	20	-
Min. Time or Ped. Time (sec)	10	20	20	10	20	20	-	20	20	10	20	-
Delay - 15 min pk (sec/veh)	15	14	14	24	15	6	-	18	18	20	19	-
Level of Service (LOS)	B	B	B	C+	B	A	-	B	B	C+	B	-
Average 'Q' (veh/ln)	1	1	1	3	1	3	-	2	2	2	3	-
Design 'Q'- ft/ln	40	40	40	100	40	100	-	60	60	60	100	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	-

Summary

Whole Intersection

Weighted Avg Delay (sec) = 16
Level of Service - LOS = B

Critical Movements

Weighted Avg Delay (sec) = 21
Level of Service - LOS = C+
Intersection Capacity Utilization - ICU = 0.43

Required Cycle Length is 63 sec

Min./Ped. Times Satisfied

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

City of San Bernardino
N/S: Hunts Lane
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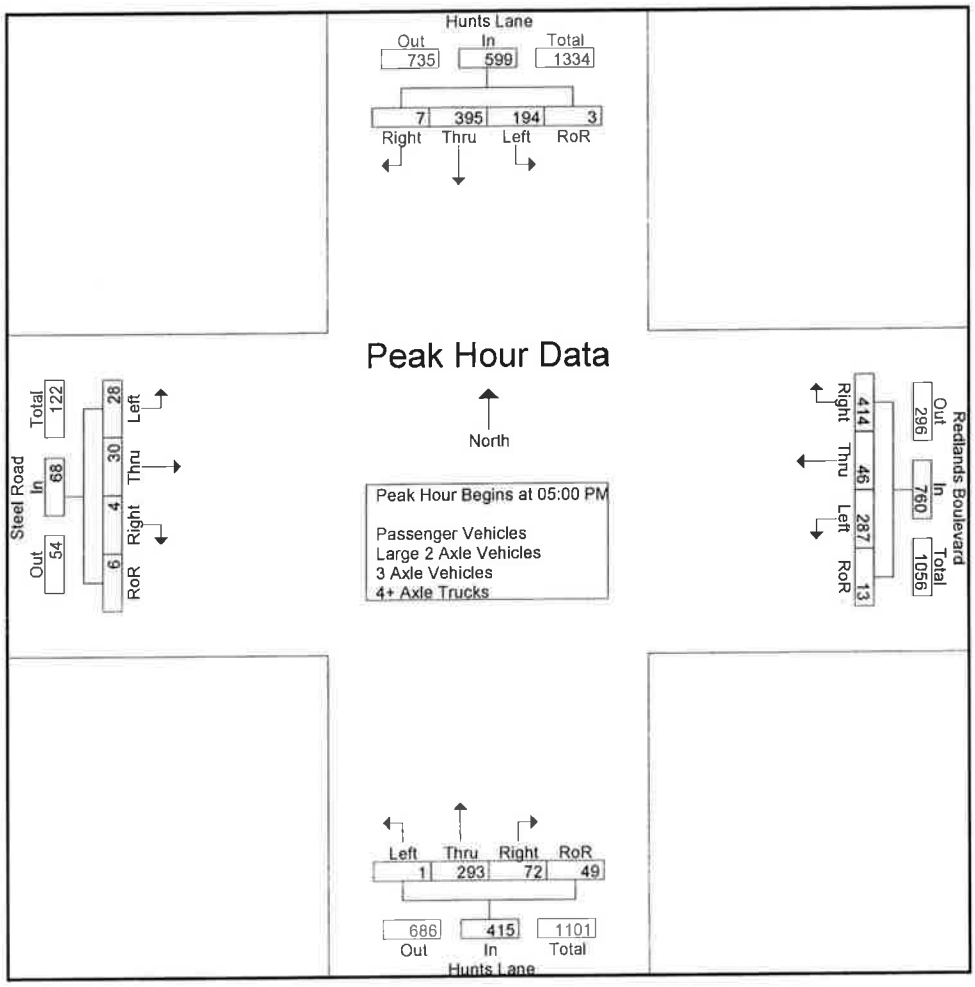

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM					05:00 PM					04:30 PM					04:30 PM				
+0 mins.	48	83	0	**2**	133	64	13	93	3	173	**3**	77	19	**11**	110	**11**	11	1	**2**	**25**
+15 mins.	32	89	2	0	123	76	7	**121**	3	**207**	1	**99**	18	8	**126**	7	5	2	0	14
+30 mins.	60	84	**3**	0	147	**78**	9	99	1	187	0	78	**21**	7	106	8	**13**	1	2	24
+45 mins.	**71**	**128**	3	2	**204**	69	**17**	101	**6**	193	0	78	20	11	109	9	7	**3**	2	21
Total Volume	211	384	8	4	607	287	46	414	13	760	4	332	78	37	451	35	36	7	6	84
% App. Total	34.8	63.3	1.3	0.7		37.8	6.1	54.5	1.7		0.9	73.6	17.3	8.2		41.7	42.9	8.3	7.1	
PHF	.743	.750	.667	.500	.744	.920	.676	.855	.542	.918	.333	.838	.929	.841	.895	.795	.692	.583	.750	.840