

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

12

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Bastanchury Rd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 13 secs	X			X								
Movement 2: 7 secs	X	X	X									
Movement 3: 33 secs		X	X		X	X						
Movement 4: 13 secs							X			X		
Movement 5: 3 secs										X	X	X
Movement 6: 31 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	2	3	1	2	3	S	2	3	S
Unadjusted Volume	263	1319	154	165	1100	307	245	1088	246	399	880	261
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
Min/Ped Time Override (sec)	13	31	31	13	31	31	13	25	25	13	25	25
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	263	1319	154	165	1100	307	245	1088	246	399	880	261
Saturation Flow (vph)	1800	5700	Shrd	3500	5700	1800	3500	5700	Shrd	3500	5700	Shrd
X or Volume/Capacity	0.81	0.68	-	0.43	0.62	0.55	0.64	0.81	-	0.81	0.63	-
Effective Green (sec)	18	38	-	11	31	31	11	29	-	14	32	-
Split Time (sec)	20	40	-	13	33	33	13	31	-	16	34	-
Min. Time or Ped. Time (sec)	13	31	-	13	31	31	13	25	-	13	25	-
Delay - 15 min pk (sec/veh)	59	28	-	45	31	33	50	37	-	56	31	-
Level of Service (LOS)	E+	C	-	D	C-	C-	D-	D+	-	E+	C-	-
Average 'Q' (veh/ln)	6	8	-	2	7	6	3	9	-	5	7	-
Design 'Q'-ft/ln (1.5*Qavg)	180	240	-	60	220	180	100	280	-	160	220	-
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 36	Weighted Average Delay (seconds) = 40
Level of Service - LOS = D+	Level of Service - LOS = D+
	Intersection Capacity Utilization - ICU = 0.75
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

13

Existing Traffic with Existing Lane Geometrics

Bastanchury Rd at Brea Blvd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 15 secs	X			X					X			X
Movement 2: 2 secs				X	X	X			X			
Movement 3: 36 secs		X	X		X	X						
Movement 4: 13 secs							X			X		
Movement 5: 4 secs										X	X	X
Movement 6: 30 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	1	2	3	S	1	2	1	2	2	1
Unadjusted Volume	320	1325	211	385	1221	174	124	576	279	343	873	32
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Min/Ped Time Override (sec)	12	36	36	12	31	31	12	30	30	12	33	33
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	320	1325	211	385	1221	174	124	576	279	343	873	32
Saturation Flow (vph)	3500	5700	1800	3500	5700	Shrd	1800	3800	1800	3500	3800	1800
X or Volume/Capacity	0.70	0.68	0.34	0.73	0.68	-	0.63	0.54	0.34	0.65	0.72	0.04
Effective Green (sec)	13	34	34	15	36	-	11	28	45	15	32	47
Split Time (sec)	15	36	36	17	38	-	13	30	47	17	34	49
Min. Time or Ped. Time (sec)	12	36	36	12	31	-	12	30	30	12	33	33
Delay - 15 min pk (sec/veh)	50	30	26	49	29	-	57	33	19	46	34	14
Level of Service (LOS)	D-	C-	C	D	C	-	E+	C-	B	D	C-	B
Average 'Q' (veh/in)	4	8	4	5	8	-	3	6	4	4	8	1
Design 'Q'-ft/in (1.5*Qavg)	120	240	120	160	240	-	100	180	120	120	240	40
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	36
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.70
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

13

Existing Traffic with Existing Lane Geometrics

Bastanchury Rd at Brea Blvd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 14 secs	X			X					X			X
Movement 2: 10 secs	X	X	X									X
Movement 3: 31 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 33 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	1	2	3	S	1	2	1	2	2	1
Unadjusted Volume	615	1028	49	324	1089	227	72	748	331	127	539	310
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
Min/Ped Time Override (sec)	12	36	36	12	31	31	12	30	30	12	33	33
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	615	1028	49	324	1089	227	72	748	331	127	539	310
Saturation Flow (vph)	3500	5700	1800	3500	5700	Shrd	1800	3800	1800	3500	3800	1800
X or Volume/Capacity	0.80	0.46	0.07	0.77	0.80	-	0.40	0.63	0.41	0.36	0.46	0.31
Effective Green (sec)	22	39	39	12	29	-	10	31	45	10	31	55
Split Time (sec)	24	41	41	14	31	-	12	33	47	12	33	57
Min. Time or Ped. Time (sec)	12	36	36	12	31	-	12	30	30	12	33	33
Delay - 15 min pk (sec/veh)	45	23	19	56	37	-	49	32	20	45	29	13
Level of Service (LOS)	D	C+	B	E+	D+	-	D	C-	C+	D	C	B
Average 'Q' (veh/ln)	7	6	1	4	9	-	2	7	5	2	5	4
Design 'Q'-ft/ln (1.5*Qavg)	220	180	40	120	280	-	60	220	160	60	160	120
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	33	Weighted Average Delay (seconds) =	38
Level of Service - LOS =	C-	Level of Service - LOS =	D+
Intersection Capacity Utilization - ICU = 0.70			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

14

Existing Traffic with Existing Lane Geometrics

State College Blvd at Bastanchury Rd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X						X		X
Movement 2: 0 secs	X	X	X						X			X
Movement 3: 35 secs		X	X		X	X			X			
Movement 4: 12 secs			X				X		X	X		
Movement 5: 6 secs			X				X	X	X			
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	2	3	S	2	2	1	2	3	1
Unadjusted Volume	213	777	498	42	1017	85	400	259	10	143	1048	181
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
Min/Ped Time Override (sec)	12	27	27	12	34	34	12	27	27	12	34	34
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	213	777	498	42	1017	85	400	259	10	143	1048	181
Saturation Flow (vph)	3500	3800	1800	3500	5700	Shrd	3500	3800	1800	3500	5700	1800
X or Volume/Capacity	0.61	0.62	0.54	0.12	0.59	-	0.71	0.17	0.01	0.41	0.56	0.22
Effective Green (sec)	10	33	51	10	33	-	16	39	100	10	33	45
Split Time (sec)	12	35	53	12	35	-	18	41	100	12	35	47
Min. Time or Ped. Time (sec)	12	27	27	12	34	-	12	27	27	12	34	34
Delay - 15 min pk (sec/veh)	51	31	19	42	29	-	47	20	0	46	29	17
Level of Service (LOS)	D-	C-	B	D	C	-	D	C+	A	D	C	B
Average 'Q' (veh/ln)	3	7	7	1	7	-	5	2	0	2	7	3
Design 'Q'-ft/ln (1.5*Qavg)	100	220	220	40	220	-	160	60	0	60	220	100
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	31	Weighted Average Delay (seconds) =	34
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.60
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

14

Existing Traffic with Existing Lane Geometrics

State College Blvd at Bastanchury Rd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 12 secs	X			X					X			X
Movement 2: 0 secs	X	X	X						X			X
Movement 3: 34 secs		X	X		X	X			X			
Movement 4: 12 secs			X				X		X	X		
Movement 5: 8 secs			X				X	X	X			
Movement 6: 34 secs							X	X			X	X
# of Lanes (#, S, P)	2	2	1	2	3	S	2	2	1	2	3	1
Unadjusted Volume	286	1066	304	37	975	244	550	1018	31	161	485	198
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
Min/Ped Time Override (sec)	12	27	27	12	34	34	12	27	27	12	34	34
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	286	1066	304	37	975	244	550	1018	31	161	485	198
Saturation Flow (vph)	3500	3800	1800	3500	5700	Shrd	3500	3800	1800	3500	5700	1800
X or Volume/Capacity	0.82	0.88	0.32	0.11	0.67	-	0.87	0.67	0.02	0.46	0.27	0.25
Effective Green (sec)	10	32	52	10	32	-	18	40	100	10	32	44
Split Time (sec)	12	34	54	12	34	-	20	42	100	12	34	46
Min. Time or Ped. Time (sec)	12	27	27	12	34	-	12	27	27	12	34	34
Delay - 15 min pk (sec/veh)	63	41	15	42	31	-	55	27	0	47	26	18
Level of Service (LOS)	E	D	B	D	C-	-	E+	C	A	D	C	B
Average 'Q' (veh/in)	4	10	4	1	8	-	7	8	0	2	3	3
Design 'Q'-ft/in (1.5*Qavg)	120	300	120	40	240	-	220	240	0	60	100	100
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	36	Weighted Average Delay (seconds) =	34
Level of Service - LOS =	D+	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.66
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

15

Existing Traffic with Existing Lane Geometrics

Bastanchury Rd at Associated Rd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	T	*R*	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 18 secs	X			X								
Movement 2: 34 secs		X	X		X	X						
Movement 3: 17 secs							X			X		
Movement 4: 31 secs								X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	1	P	2	S	P	2	S
Unadjusted Volume	172	672	476	212	776	36	284	172	100	56	636	256
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
Min/Ped Time Override (sec)	12	21	21	12	21	21	8	20	20	8	20	20
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	172	672	476	212	776	36	284	172	100	56	636	256
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.60	0.55	0.83	0.74	0.64	0.06	0.79	0.25	-	0.06	0.81	-
Effective Green (sec)	16	32	32	16	32	32	15	29	-	15	29	-
Split Time (sec)	18	34	34	18	34	34	17	31	-	17	31	-
Min. Time or Ped. Time (sec)	12	21	21	12	21	21	8	20	-	8	20	-
Delay - 15 min pk (sec/veh)	48	30	44	55	32	24	47	28	-	4	39	-
Level of Service (LOS)	D	C	D	E+	C-	C+	D	C	-	A	D+	-
Average 'Q' (veh/ln)	4	6	9	5	7	1	5	3	-	1	9	-
Design 'Q'-ft/ln (1.5*Qavg)	120	180	280	160	220	40	160	100	-	40	280	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	38	Weighted Average Delay (seconds) =	44
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.80
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

15

Existing Traffic with Existing Lane Geometrics

Bastanchury Rd at Associated Rd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 16 secs	X			X								
Movement 2: 6 secs	X	X	X									
Movement 3: 28 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 14 secs							X	X	X			
Movement 6: 28 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	1	1	2	1	P	2	S	P	2	S
Unadjusted Volume	200	884	332	148	676	56	320	600	116	72	416	148
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
Min/Ped Time Override (sec)	12	21	21	12	21	21	8	20	20	8	20	20
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	200	884	332	148	676	56	320	600	116	72	416	148
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.56	0.73	0.58	0.59	0.68	0.12	0.70	0.47	-	0.20	0.57	-
Effective Green (sec)	20	32	32	14	26	26	20	40	-	6	26	-
Split Time (sec)	22	34	34	16	28	28	22	42	-	8	28	-
Min. Time or Ped. Time (sec)	12	21	21	12	21	21	8	20	-	8	20	-
Delay - 15 min pk (sec/veh)	42	34	33	50	37	29	37	23	-	6	35	-
Level of Service (LOS)	D	C-	C-	D	D+	C	D+	C+	-	A	C-	-
Average 'Q' (veh/ln)	4	8	6	4	7	1	6	6	-	1	6	-
Design 'Q'-ft/ln (1.5*Qavg)	120	240	180	120	220	40	180	180	-	40	180	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	36
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.65
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

16

Existing Traffic with Existing Lane Geometrics

State College Blvd at Yorba Linda Blvd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 22 secs	X	X	X									
Movement 2: 42 secs				X	X	X			X			
Movement 3: 12 secs						X	X			X		
Movement 4: 2 secs										X	X	X
Movement 5: 22 secs							X	X		X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	S	3	S	S	3	1	1	2	1	2	3	S
Unadjusted Volume	124	348	104	1040	380	252	40	544	432	300	840	256
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
Sat. Flow Override (vph)	Shrd		Shrd	Shrd	5100							Shrd
Min/Ped Time Override (sec)	20	20	20	20	20	20	12	20	20	12	20	20
Progression Adj. Factor (PAF)	-	1.00	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	124	348	104	1040	380	252	40	544	432	300	840	256
Saturation Flow (vph)	Shrd	5700	Shrd	Shrd	5100	1800	1800	3800	1800	3500	5700	Shrd
X or Volume/Capacity	-	0.51	-	-	0.70	0.27	0.22	0.72	0.39	0.71	0.87	-
Effective Green (sec)	-	20	-	-	40	52	10	20	62	12	22	-
Split Time (sec)	-	22	-	-	42	54	12	22	64	14	24	-
Min. Time or Ped. Time (sec)	-	20	-	-	20	20	12	20	20	12	20	-
Delay - 15 min pk (sec/veh)	-	37	-	-	27	14	44	43	11	52	46	-
Level of Service (LOS)	-	D+	-	-	C	B	D	D	B	D-	D	-
Average 'Q' (veh/ln)	-	4	-	-	8	3	1	6	5	4	8	-
Design 'Q'-fl/ln (1.5*Qavg)	-	120	-	-	240	100	40	180	160	120	240	-
Do Vehicles Clear?	-	YES	-	-	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 35	Weighted Average Delay (seconds) = 35
Level of Service - LOS = C-	Level of Service - LOS = C-
Intersection Capacity Utilization - ICU = 0.66	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Yorba Linda Blvd WB Approach is striped as 2 left-turns, 1 shared left-turn/through, and 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

16

Existing Traffic with Existing Lane Geometrics

State College Blvd at Yorba Linda Blvd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 21 secs	X	X	X									
Movement 2: 23 secs				X	X	X			X			
Movement 3: 12 secs						X	X			X		
Movement 4: 0 secs										X	X	X
Movement 5: 44 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	S	3	S	S	3	1	1	2	1	2	3	S
Unadjusted Volume	88	264	28	824	192	380	52	1504	1096	300	932	76
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
Sat. Flow Override (vph)	Shrd		Shrd	Shrd	5100							Shrd
Min/Ped Time Override (sec)	20	20	20	20	20	20	12	20	20	12	20	20
Progression Adj. Factor (PAF)	-	1.00	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	88	264	28	824	192	380	52	1504	1096	300	932	76
Saturation Flow (vph)	Shrd	5700	Shrd	Shrd	5100	1800	1800	3800	1800	3500	5700	Shrd
X or Volume/Capacity	-	0.35	-	-	0.95	0.64	0.29	0.94	0.94	0.86	0.42	-
Effective Green (sec)	-	19	-	-	21	33	10	42	65	10	42	-
Split Time (sec)	-	21	-	-	23	35	12	44	67	12	44	-
Min. Time or Ped. Time (sec)	-	20	-	-	20	20	12	20	20	12	20	-
Delay - 15 min pk (sec/veh)	-	36	-	-	57	34	46	40	31	67	21	-
Level of Service (LOS)	-	D+	-	-	E+	C-	D	D	C-	E	C+	-
Average 'Q' (veh/in)	-	3	-	-	8	7	1	13	12	4	5	-
Design 'Q'-ft/in (1.5*Qavg)	-	100	-	-	240	220	40	400	360	120	160	-
Do Vehicles Clear?	-	YES	-	-	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 39	Weighted Average Delay (seconds) = 48
Level of Service - LOS = D+	Level of Service - LOS = D
Intersection Capacity Utilization - ICU = 0.81	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Yorba Linda Blvd WB Approach is striped as 2 left-turns, 1 shared left-turn/through, and 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

17

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Associated Rd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	L	T	*R*
Movement 1: 12 secs	X			X					X			X
Movement 2: 17 secs				X	X	X			X			
Movement 3: 26 secs		X	X		X	X						
Movement 4: 14 secs							X	X	X			
Movement 5: 31 secs						X				X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	S	2	2	1	1	1	1	S	2	1
Unadjusted Volume	184	644	184	380	1180	384	20	28	48	636	256	560
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
Sat. Flow Override (vph)			Shrd							Shrd	3500	
Min/Ped Time Override (sec)	12	26	26	12	26	26	14	14	14	30	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	184	644	184	380	1180	384	20	28	48	636	256	560
Saturation Flow (vph)	3500	5700	Shrd	3500	3800	1800	1800	1900	1800	Shrd	3500	1800
X or Volume/Capacity	0.53	0.61	-	0.40	0.76	0.30	0.09	0.12	0.07	-	0.88	0.76
Effective Green (sec)	10	24	-	27	41	72	12	12	41	-	29	41
Split Time (sec)	12	26	-	29	43	74	14	14	43	-	31	43
Min. Time or Ped. Time (sec)	12	26	-	12	26	26	14	14	14	-	30	30
Delay - 15 min pk (sec/veh)	48	36	-	31	29	6	40	40	18	-	45	32
Level of Service (LOS)	D	D+	-	C-	C	A	D	D	B	-	D	C-
Average 'Q' (veh/ln)	2	6	-	4	10	3	1	1	1	-	9	9
Design 'Q'-ft/ln (1.5*Qavg)	60	180	-	120	300	100	40	40	40	-	280	280
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	-	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	33	Weighted Average Delay (seconds) =	32
Level of Service - LOS =	C-	Level of Service - LOS =	C-
Intersection Capacity Utilization - ICU = 0.69			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Associated Rd SB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

17

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Associated Rd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	T	*R*	L	*T*	R
Movement 1: 12 secs	X			X					X			X
Movement 2: 4 secs	X	X	X									X
Movement 3: 32 secs		X	X		X	X						
Movement 4: 22 secs							X	X	X			
Movement 5: 30 secs						X				X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	S	2	2	1	1	1	1	S	2	1
Unadjusted Volume	364	1348	72	136	868	636	168	212	404	500	68	276
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
Sat. Flow Override (vph)			Shrd							Shrd	3500	
Min/Ped Time Override (sec)	12	26	26	12	26	26	14	14	14	30	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	364	1348	72	136	868	636	168	212	404	500	68	276
Saturation Flow (vph)	3500	5700	Shrd	3500	3800	1800	1800	1900	1800	Shrd	3500	1800
X or Volume/Capacity	0.74	0.73	-	0.39	0.76	0.59	0.47	0.56	0.70	-	0.58	0.35
Effective Green (sec)	14	34	-	10	30	60	20	20	32	-	28	44
Split Time (sec)	16	36	-	12	32	62	22	22	34	-	30	46
Min. Time or Ped. Time (sec)	12	26	-	12	26	26	14	14	14	-	30	30
Delay - 15 min pk (sec/veh)	51	32	-	45	37	15	40	42	37	-	33	20
Level of Service (LOS)	D-	C-	-	D	D+	B	D+	D	D+	-	C-	B
Average 'Q' (veh/ln)	4	9	-	2	8	7	4	5	8	-	6	4
Design 'Q'-ft/ln (1.5*Qavg)	120	280	-	60	240	220	120	160	240	-	180	120
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	-	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 33	Weighted Average Delay (seconds) = 39
Level of Service - LOS = C-	Level of Service - LOS = D+
Intersection Capacity Utilization - ICU = 0.74	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Associated Rd SB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

18

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Placentia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 14 secs	X			X								X
Movement 2: 4 secs				X	X	X						
Movement 3: 31 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 13 secs							X	X	X			
Movement 6: 30 secs								X	X	X	X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	P	2	S	P	2	1
Unadjusted Volume	346	1323	143	368	1648	68	383	633	164	144	793	395
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
Min/Ped Time Override (sec)	12	23	23	12	22	22	8	29	29	8	30	30
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	346	1323	143	368	1648	68	383	633	164	144	793	395
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.82	0.89	-	0.66	0.91	-	0.92	0.51	-	0.67	0.75	0.52
Effective Green (sec)	12	29	-	16	33	-	19	41	-	6	28	42
Split Time (sec)	14	31	-	18	35	-	21	43	-	8	30	44
Min. Time or Ped. Time (sec)	12	23	-	12	22	-	8	29	-	8	30	30
Delay - 15 min pk (sec/veh)	60	41	-	45	40	-	60	23	-	38	38	24
Level of Service (LOS)	E+	D	-	D	D	-	E+	C+	-	D+	D+	C+
Average 'Q' (veh/ln)	4	10	-	4	11	-	8	7	-	2	8	6
Design 'Q'-ft/ln (1.5*Qavg)	120	300	-	120	340	-	240	220	-	60	240	180
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	44
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.85
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

18

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Placentia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement 1: 12 secs	X			X								X
Movement 2: 10 secs	X	X	X									X
Movement 3: 22 secs		X	X		X	X						
Movement 4: 17 secs							X			X		
Movement 5: 9 secs							X	X	X			
Movement 6: 30 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	P	2	S	P	2	1
Unadjusted Volume	534	1715	139	377	1052	99	395	1188	348	352	829	251
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
Min/Ped Time Override (sec)	12	23	23	12	22	22	8	29	29	8	30	30
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	534	1715	139	377	1052	99	395	1188	348	352	829	251
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.76	1.08	-	1.08	1.01	-	0.75	1.09	-	1.04	0.78	0.28
Effective Green (sec)	20	30	-	10	20	-	24	37	-	15	28	50
Split Time (sec)	22	32	-	12	22	-	26	39	-	17	30	52
Min. Time or Ped. Time (sec)	12	23	-	12	22	-	8	29	-	8	30	30
Delay - 15 min pk (sec/veh)	45	85	-	116	69	-	38	87	-	95	39	15
Level of Service (LOS)	D	F	-	F	E	-	D+	F	-	F	D+	B
Average 'Q' (veh/ln)	6	14	-	6	9	-	7	16	-	8	8	3
Design 'Q'-ft/ln (1.5*Qavg)	180	420	-	180	280	-	220	480	-	240	240	100
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	NO	-	NO	NO	-	YES	NO	-	NO	YES	YES

Summary of Results

Oversaturated - Mitigation Required			
Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	72	Weighted Average Delay (seconds) =	90
Level of Service - LOS =	E	Level of Service - LOS =	F
		Intersection Capacity Utilization - ICU =	1.08
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

19

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Brea Blvd/ W. Valley View

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X	X	X						X			
Movement 2: 25 secs				X	X	X			X			
Movement 3: 12 secs						X	X	X	X	X		
Movement 4: 51 secs								X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	S	2	1	1	3	1	1	3	S
Unadjusted Volume	41	93	26	551	133	144	51	831	299	49	1599	84
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
Sat. Flow Override (vph)				Shrd	3500			4100			4100	Shrd
Min/Ped Time Override (sec)	12	12	12	25	25	25	12	19	19	12	25	25
Progression Adj. Factor (PAF)	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	41	93	26	551	133	144	51	831	299	49	1599	84
Saturation Flow (vph)	1800	1900	1800	Shrd	3500	1800	1800	4100	1800	1800	4100	Shrd
X or Volume/Capacity	0.23	0.49	0.14	-	0.85	0.23	0.28	0.41	0.17	0.27	0.84	-
Effective Green (sec)	10	10	10	-	23	35	10	49	100	10	49	-
Split Time (sec)	12	12	12	-	25	37	12	51	100	12	51	-
Min. Time or Ped. Time (sec)	12	12	12	-	25	25	12	19	19	12	25	-
Delay - 15 min pk (sec/veh)	44	51	43	-	48	24	46	17	0	45	26	-
Level of Service (LOS)	D	D-	D	-	D	C+	D	B	A	D	C	-
Average 'Q' (veh/ln)	1	2	1	-	8	3	1	4	0	1	8	-
Design 'Q'-ft/ln (1.5*Qavg)	40	60	40	-	240	100	40	120	0	40	240	-
Do Vehicles Clear?	YES	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 28	Weighted Average Delay (seconds) = 34
Level of Service - LOS = C	Level of Service - LOS = C-
Intersection Capacity Utilization - ICU = 0.74	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Brea Blvd WB Approach is 1 left-turn, 1 shared left-turn/through, 1 free right-turn; Harbor Blvd NB Approach widens from 2 to 3 lanes before intersection; Harbor Blvd SB Approach merges from 3 to 2 lanes immediately south of intersection	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

19

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Brea Blvd/ W. Valley View

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 15 secs	X	X	X						X			
Movement 2: 31 secs				X	X	X			X			
Movement 3: 12 secs						X	X		X	X		
Movement 4: 0 secs						X			X	X	X	X
Movement 5: 42 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	S	2	1	1	3	1	1	3	S
Unadjusted Volume	74	190	52	658	128	98	21	1254	549	97	1194	45
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
Sat. Flow Override (vph)				Shrd	3500			4100			4100	Shrd
Min/Ped Time Override (sec)	12	12	12	25	25	25	12	19	19	12	25	25
Progression Adj. Factor (PAF)	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	74	190	52	658	128	98	21	1254	549	97	1194	45
Saturation Flow (vph)	1800	1900	1800	Shrd	3500	1800	1800	4100	1800	1800	4100	Shrd
X or Volume/Capacity	0.32	0.77	0.22	-	0.77	0.13	0.12	0.76	0.31	0.54	0.76	-
Effective Green (sec)	13	13	13	-	29	41	10	40	100	10	40	-
Split Time (sec)	15	15	15	-	31	43	12	42	100	12	42	-
Min. Time or Ped. Time (sec)	12	12	12	-	25	25	12	19	19	12	25	-
Delay - 15 min pk (sec/veh)	43	62	41	-	38	19	42	29	0	54	29	-
Level of Service (LOS)	D	E	D	-	D+	B	D	C	A	D-	C	-
Average 'Q' (veh/ln)	2	5	1	-	8	2	1	7	0	2	7	-
Design 'Q'-ft/ln (1.5*Qavg)	60	160	40	-	240	60	40	220	0	60	220	-
Do Vehicles Clear?	YES	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	30	Weighted Average Delay (seconds) =	37
Level of Service - LOS =	C	Level of Service - LOS =	D+
Intersection Capacity Utilization - ICU = 0.74			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Brea Blvd WB Approach is 1 left-turn, 1 shared left-turn/through, 1 free right-turn; Harbor Blvd NB Approach widens from 2 to 3 lanes before intersection; Harbor Blvd SB Approach merges from 3 to 2 lanes immediately south of intersection			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

20

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Berkeley Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	L	T	R	L*	T	R	L	T*	R
Movement 1: 28 secs	X	X	X	X	X	X						
Movement 2: 17 secs						X	X			X		
Movement 3: 55 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	1	2	S	2	2	1
Unadjusted Volume	50	199	96	85	160	286	192	911	33	315	1404	13
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
Min/Ped Time Override (sec)	28	28	28	28	28	28	12	31	31	12	31	31
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	50	199	96	85	160	286	192	911	33	315	1404	13
Saturation Flow (vph)	750	1900	1800	1150	1900	1800	1800	3800	Shrd	3500	3800	1800
X or Volume/Capacity	0.26	0.40	0.21	0.28	0.32	0.37	0.71	0.47	-	0.60	0.70	0.01
Effective Green (sec)	26	26	26	26	26	43	15	53	-	15	53	53
Split Time (sec)	28	28	28	28	28	45	17	55	-	17	55	55
Min. Time or Ped. Time (sec)	28	28	28	28	28	28	12	31	-	12	31	31
Delay - 15 min pk (sec/veh)	32	33	30	32	32	21	55	15	-	45	20	11
Level of Service (LOS)	C-	C-	C	C-	C-	C+	E+	B	-	D	B	B
Average 'Q' (veh/in)	1	4	2	2	3	5	5	6	-	4	9	1
Design 'Q'-ft/in (1.5*Qavg)	40	120	60	60	100	160	160	180	-	120	280	40
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	25	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C+	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.62
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

20

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Berkeley Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound		Southbound			
	L	T	R	L	T	R	L	*T*	R	*L*	T	R
Movement 1: 28 secs	X	X	X	X	X	X						
Movement 2: 12 secs						X	X			X		
Movement 3: 8 secs						X				X	X	X
Movement 4: 52 secs								X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	1	1	1	2	S	2	2	1
Unadjusted Volume	61	244	166	78	177	453	88	1280	48	423	1409	17
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
Min/Ped Time Override (sec)	28	28	28	28	28	28	12	31	31	12	31	31
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00

Output

	***			***				***				
Peak Hour Volume (vph)	61	244	166	78	177	453	88	1280	48	423	1409	17
Saturation Flow (vph)	450	1900	1800	1000	1900	1800	1800	3800	Shrd	3500	3800	1800
X or Volume/Capacity	0.52	0.49	0.35	0.30	0.36	0.55	0.49	0.70	-	0.67	0.64	0.02
Effective Green (sec)	26	26	26	26	26	46	10	50	-	18	58	58
Split Time (sec)	28	28	28	28	28	48	12	52	-	20	60	60
Min. Time or Ped. Time (sec)	28	28	28	28	28	28	12	31	-	12	31	31
Delay - 15 min pk (sec/veh)	47	35	32	33	32	22	52	21	-	44	15	9
Level of Service (LOS)	D	C-	C-	C-	C-	C+	D-	C+	-	D	B	A
Average 'Q' (veh/ln)	1	5	3	2	4	7	2	9	-	5	8	1
Design 'Q'-ft/ln (1.5*Qavg)	40	160	100	60	120	220	60	280	-	160	240	40
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	25	Weighted Average Delay (seconds) =	28
Level of Service - LOS =	C+	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.64
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

21

Existing Traffic with Existing Lane Geometrics

Lemon St at Berkeley Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	L	T	R	*L*	T	R	L	*T*	R
Movement 1: 37 secs	X	X	X	X	X	X						
Movement 2: 33 secs										X	X	X
Movement 3: 30 secs							X	X	X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	2	S	1	1	1	1	1	S
Unadjusted Volume	27	389	344	123	441	60	177	139	128	57	332	16
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
Min/Ped Time Override (sec)	24	24	24	24	24	24	26	26	26	26	26	26
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

Peak Hour Volume (vph)	27	389	344	123	441	60	177	139	128	57	332	16
Saturation Flow (vph)	800	1900	1800	650	3800	Shrd	1800	1900	1800	1800	1900	Shrd
X or Volume/Capacity	0.10	0.58	0.55	0.54	0.38	-	0.35	0.26	0.25	0.10	0.59	-
Effective Green (sec)	35	35	35	35	35	-	28	28	28	31	31	-
Split Time (sec)	37	37	37	37	37	-	30	30	30	33	33	-
Min. Time or Ped. Time (sec)	24	24	24	24	24	-	26	26	26	26	26	-
Delay - 15 min pk (sec/veh)	23	30	29	35	25	-	31	29	29	25	33	-
Level of Service (LOS)	C+	C-	C	C-	C	-	C-	C	C	C+	C-	-
Average 'Q' (veh/ln)	1	7	6	2	5	-	4	3	3	1	7	-
Design 'Q'-ft/ln (1.5*Qavg)	40	220	180	60	160	-	120	100	100	40	220	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 30	Weighted Average Delay (seconds) = 32
Level of Service - LOS = C	Level of Service - LOS = C-
Intersection Capacity Utilization - ICU = 0.52	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Berkeley Ave NB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

21

Existing Traffic with Existing Lane Geometrics

Lemon St at Berkeley Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 31 secs	X	X	X	X	X	X						
Movement 2: 30 secs										X	X	X
Movement 3: 39 secs							X	X	X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	1	1	2	S	1	1	1	1	1	S
Unadjusted Volume	21	291	188	73	413	91	270	367	83	102	264	18
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
Min/Ped Time Override (sec)	24	24	24	24	24	24	26	26	26	26	26	26
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

Peak Hour Volume (vph)	21	291	188	73	413	91	270	367	83	102	264	18
Saturation Flow (vph)	800	1900	1800	950	3800	Shrd	1800	1900	1800	1800	1900	Shrd
X or Volume/Capacity	0.09	0.53	0.36	0.26	0.46	-	0.41	0.52	0.12	0.20	0.53	-
Effective Green (sec)	29	29	29	29	29	-	37	37	37	28	28	-
Split Time (sec)	31	31	31	31	31	-	39	39	39	30	30	-
Min. Time or Ped. Time (sec)	24	24	24	24	24	-	26	26	26	26	26	-
Delay - 15 min pk (sec/veh)	27	33	30	30	30	-	25	27	21	28	34	-
Level of Service (LOS)	C	C-	C-	C	C-	-	C	C-	C+	C	C-	-
Average 'Q' (veh/ln)	1	6	4	1	5	-	5	6	1	2	6	-
Design 'Q'-ft/ln (1.5*Qavg)	40	180	120	40	160	-	160	180	40	60	180	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 30	Weighted Average Delay (seconds) = 32
Level of Service - LOS = C	Level of Service - LOS = C-
	Intersection Capacity Utilization - ICU = 0.53
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Berkeley Ave NB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

22

Existing Traffic with Existing Lane Geometrics

Malvern Ave at Gilbert St

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	*L*	T	R	*L*	T	R	L	T*	R
Movement Times												
Movement 1: 12 secs	X			X					X			
Movement 2: 12 secs				X	X	X			X			
Movement 3: 26 secs		X	X		X	X						
Movement 4: 12 secs						X	X			X		
Movement 5: 6 secs									X	X	X	X
Movement 6: 32 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	1	1	2	1	1	2	S
Unadjusted Volume	244	1131	204	736	888	88	103	579	486	105	1089	241
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
Min/Ped Time Override (sec)	12	26	26	12	28	28	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	244	1131	204	736	888	88	103	579	486	105	1089	241
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	1800	1800	3800	1800	1800	3800	Shrd
X or Volume/Capacity	0.70	0.98	-	0.96	0.43	0.10	0.57	0.51	0.50	0.36	0.97	-
Effective Green (sec)	10	24	-	22	36	48	10	30	54	16	36	-
Split Time (sec)	12	26	-	24	38	50	12	32	56	18	38	-
Min. Time or Ped. Time (sec)	12	26	-	12	28	28	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	54	57	-	62	25	14	56	31	16	41	50	-
Level of Service (LOS)	D-	E+	-	E	C+	B	E+	C-	B	D	D-	-
Average 'Q' (veh/ln)	3	10	-	9	5	1	3	6	6	2	13	-
Design 'Q'-ft/ln (1.5*Qavg)	100	300	-	280	160	40	100	180	180	60	400	-
Do Vehicles Clear?	YES	NO	-	NO	YES	YES	YES	YES	YES	YES	NO	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	45	Weighted Average Delay (seconds) =	56
Level of Service - LOS =	D	Level of Service - LOS =	E+
		Intersection Capacity Utilization - ICU =	0.93
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

22

Existing Traffic with Existing Lane Geometrics

Malvern Ave at Gilbert St

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement 1: 18 secs	X			X					X			
Movement 2: 4 secs				X	X	X			X			
Movement 3: 26 secs		X	X		X	X						
Movement 4: 12 secs						X	X			X		
Movement 5: 5 secs							X	X	X			
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	1	1	2	1	1	2	S
Unadjusted Volume	431	916	97	582	885	169	202	1193	589	107	748	213
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
Min/Ped Time Override (sec)	12	26	26	12	28	28	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	431	916	97	582	885	169	202	1193	589	107	748	213
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	1800	1800	3800	1800	1800	3800	Shrd
X or Volume/Capacity	0.77	0.74	-	0.83	0.55	0.23	0.75	0.83	0.55	0.59	0.77	-
Effective Green (sec)	16	24	-	20	28	40	15	38	60	10	33	-
Split Time (sec)	18	26	-	22	30	42	17	40	62	12	35	-
Min. Time or Ped. Time (sec)	12	26	-	12	28	28	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	50	39	-	49	32	21	58	34	14	57	35	-
Level of Service (LOS)	D-	D+	-	D	C-	C+	E+	C-	B	E+	C-	-
Average 'Q' (veh/ln)	5	7	-	7	6	3	5	10	7	3	9	-
Design 'Q'-ft/ln (1.5*Qavg)	160	220	-	220	180	100	160	300	220	100	280	-
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	36	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	D+	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.78
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

23

Existing Traffic with Existing Lane Geometrics

Malvern Ave at Bastanchury Rd

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	L	*T*	R
Movement 1: 12 secs	X			X								X
Movement 2: 10 secs	X	X	X									X
Movement 3: 31 secs		X	X		X	X						
Movement 4: 13 secs							X	X	X			
Movement 5: 34 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	2	S	1	2	S	S	1	S	1	2	S
Unadjusted Volume	560	817	10	10	561	301	10	10	11	292	10	858
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
Sat. Flow Override (vph)			Shrd			Shrd	Shrd		Shrd		3400	Shrd
Min/Ped Time Override (sec)	12	16	16	12	24	24	12	12	12	25	25	25
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	-	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	560	817	10	10	561	301	10	10	11	292	10	858
Saturation Flow (vph)	3500	3800	Shrd	1800	3800	Shrd	Shrd	1900	Shrd	1800	3400	Shrd
X or Volume/Capacity	0.80	0.56	-	0.06	0.78	-	-	0.15	-	0.51	0.80	-
Effective Green (sec)	20	39	-	10	29	-	-	11	-	32	32	-
Split Time (sec)	22	41	-	12	31	-	-	13	-	34	34	-
Min. Time or Ped. Time (sec)	12	16	-	12	24	-	-	12	-	25	25	-
Delay - 15 min pk (sec/veh)	47	25	-	41	38	-	-	42	-	31	37	-
Level of Service (LOS)	D	C	-	D	D+	-	-	D	-	C-	D+	-
Average 'Q' (veh/ln)	6	7	-	1	9	-	-	1	-	6	8	-
Design 'Q'-ft/ln (1.5*Qavg)	180	220	-	40	280	-	-	40	-	180	240	-
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	36	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.72
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

23

Existing Traffic with Existing Lane Geometrics

Malvern Ave at Bastanchury Rd

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	L	*T*	R
Movement 1: 12 secs	X			X								X
Movement 2: 8 secs	X	X	X									X
Movement 3: 39 secs		X	X		X	X						
Movement 4: 16 secs							X	X	X			
Movement 5: 25 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	2	S	1	2	S	S	1	S	1	2	S
Unadjusted Volume	499	680	10	10	966	190	10	10	10	156	10	646
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
Sat. Flow Override (vph)			Shrd			Shrd	Shrd		Shrd		3400	Shrd
Min/Ped Time Override (sec)	12	20	20	12	20	20	15	15	15	15	15	15
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	-	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	499	680	10	10	966	190	8	10	10	156	10	646
Saturation Flow (vph)	3500	3800	Shrd	1800	3800	Shrd	Shrd	1900	Shrd	1800	3400	Shrd
X or Volume/Capacity	0.79	0.40	-	0.06	0.82	-	-	0.12	-	0.38	0.84	-
Effective Green (sec)	18	45	-	10	37	-	-	14	-	23	23	-
Split Time (sec)	20	47	-	12	39	-	-	16	-	25	25	-
Min. Time or Ped. Time (sec)	12	20	-	12	20	-	-	15	-	15	15	-
Delay - 15 min pk (sec/veh)	49	19	-	41	34	-	-	38	-	35	47	-
Level of Service (LOS)	D	B	-	D	C-	-	-	D+	-	D+	D	-
Average 'Q' (veh/ln)	6	5	-	1	10	-	-	1	-	3	7	-
Design 'Q'-ft/ln (1.5*Qavg)	180	160	-	40	300	-	-	40	-	100	220	-
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	37	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.71
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

24

Existing Traffic with Existing Lane Geometrics

Euclid St at Malvern Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 2 secs				X	X	X						
Movement 3: 35 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 12 secs										X	X	X
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	34	812	226	180	531	78	161	925	141	227	1432	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
Min/Ped Time Override (sec)	8	22	22	8	22	22	8	21	21	8	22	22
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

		***	***	***	***	***	***	***	***	***	***	***
Peak Hour Volume (vph)	34	812	226	180	531	78	161	925	141	227	1432	21
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.09	0.83	-	0.75	0.46	-	0.83	0.85	-	0.48	0.85	-
Effective Green (sec)	6	33	-	8	35	-	6	33	-	18	45	-
Split Time (sec)	8	35	-	10	37	-	8	35	-	20	47	-
Min. Time or Ped. Time (sec)	8	22	-	8	22	-	8	21	-	8	22	-
Delay - 15 min pk (sec/veh)	5	37	-	46	26	-	57	39	-	28	30	-
Level of Service (LOS)	A	D+	-	D	C	-	E+	D+	-	C	C	-
Average 'Q' (veh/ln)	1	10	-	3	5	-	3	10	-	4	11	-
Design 'Q'-ft/ln (1.5*Qavg)	40	300	-	100	160	-	100	300	-	120	340	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	35	Weighted Average Delay (seconds) =	36
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.83
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

24

Existing Traffic with Existing Lane Geometrics

Euclid St at Malvern Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 34 secs		X	X		X	X						
Movement 4: 9 secs							X			X		
Movement 5: 13 secs							X	X	X			
Movement 6: 30 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	30	674	225	195	951	178	233	1156	111	112	934	34
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
Min/Ped Time Override (sec)	8	22	22	8	22	22	8	21	21	8	22	22
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

		***	***	***	***	***	***	***	***	***	***	***
Peak Hour Volume (vph)	30	674	225	195	951	178	233	1156	111	112	934	34
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.08	0.74	-	0.57	0.78	-	0.45	0.81	-	0.32	0.91	-
Effective Green (sec)	6	32	-	12	38	-	20	41	-	7	28	-
Split Time (sec)	8	34	-	14	40	-	22	43	-	9	30	-
Min. Time or Ped. Time (sec)	8	22	-	8	22	-	8	21	-	8	22	-
Delay - 15 min pk (sec/veh)	5	34	-	33	32	-	27	31	-	18	48	-
Level of Service (LOS)	A	C-	-	C-	C-	-	C	C-	-	B	D	-
Average 'Q' (veh/ln)	1	9	-	3	10	-	4	10	-	1	10	-
Design 'Q'-ft/ln (1.5*Qavg)	40	280	-	100	300	-	120	300	-	40	300	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	35	Weighted Average Delay (seconds) =	32
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.72
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

25

Existing Traffic with Existing Lane Geometrics

Harbor Boulevard at Chapman Avenue

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	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: 0 secs	X	X	X									
Movement 3: 34 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 13 secs										X	X	X
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	179	722	79	142	636	147	60	775	77	150	1216	106
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
Min/Ped Time Override (sec)	8	25	25	10	25	25	8	26	26	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	179	722	79	142	636	147	60	775	77	150	1216	106
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.75	0.66	-	0.49	0.64	-	0.17	0.68	-	0.23	0.76	-
Effective Green (sec)	8	32	-	8	32	-	6	33	-	19	46	-
Split Time (sec)	10	34	-	10	34	-	8	35	-	21	48	-
Min. Time or Ped. Time (sec)	8	25	-	10	25	-	8	26	-	8	26	-
Delay - 15 min pk (sec/veh)	46	32	-	27	32	-	5	32	-	19	25	-
Level of Service (LOS)	D	C-	-	C	C-	-	A	C-	-	B	C	-
Average 'Q' (veh/ln)	3	8	-	2	7	-	1	8	-	2	10	-
Design 'Q'-ft/ln (1.5*Qavg)	100	240	-	60	220	-	40	240	-	60	300	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	30	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.68
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

25

Existing Traffic with Existing Lane Geometrics

Harbor Boulevard at Chapman Avenue

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 12 secs	X			X								
Movement 2: 34 secs		X	X		X	X						
Movement 3: 8 secs							X			X		
Movement 4: 2 secs										X	X	X
Movement 5: 44 secs							X	X			X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	216	581	127	161	779	175	88	1161	119	182	977	177
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
Min/Ped Time Override (sec)	8	25	25	8	25	25	8	26	26	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	216	581	127	161	779	175	88	1161	119	182	977	177
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.80	0.58	-	0.50	0.78	-	0.24	0.80	-	0.76	0.69	-
Effective Green (sec)	10	32	-	10	32	-	6	42	-	8	44	-
Split Time (sec)	12	34	-	12	34	-	8	44	-	10	46	-
Min. Time or Ped. Time (sec)	8	25	-	8	25	-	8	26	-	8	26	-
Delay - 15 min pk (sec/veh)	51	30	-	29	36	-	10	30	-	47	25	-
Level of Service (LOS)	D-	C-	-	C	D+	-	A	C	-	D	C+	-
Average 'Q' (veh/ln)	4	7	-	2	9	-	1	10	-	3	9	-
Design 'Q'-ft/ln (1.5*Qavg)	120	220	-	60	280	-	40	300	-	100	280	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	32	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.79
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

26

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Lemon St

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	T*	R	L*	T	R	L*	T	R	L	T*	R
Movement 1: 14 secs	X			X								
Movement 2: 13 secs	X	X	X									
Movement 3: 36 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 29 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	S	2	2	1	P	2	1	P	2	S
Unadjusted Volume	162	682	180	130	576	206	78	330	43	51	411	66
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
Min/Ped Time Override (sec)	12	24	24	12	20	20	8	25	25	8	22	22
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	162	682	180	130	576	206	78	330	43	51	411	66
Saturation Flow (vph)	1800	3800	Shrd	3500	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.36	0.48	-	0.31	0.45	0.34	0.22	0.32	0.09	0.14	0.46	-
Effective Green (sec)	25	47	-	12	34	34	6	27	27	6	27	-
Split Time (sec)	27	49	-	14	36	36	8	29	29	8	29	-
Min. Time or Ped. Time (sec)	12	24	-	12	20	20	8	25	25	8	22	-
Delay - 15 min pk (sec/veh)	33	19	-	42	27	26	6	30	28	5	32	-
Level of Service (LOS)	C-	B	-	D	C	C	A	C-	C	A	C-	-
Average 'Q' (veh/in)	3	6	-	2	5	4	1	3	1	1	5	-
Design 'Q'-ft/in (1.5*Qavg)	100	180	-	60	160	120	40	100	40	40	160	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	26	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.44
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

26

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Lemon St

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 12 secs	X			X								
Movement 2: 4 secs	X	X	X									
Movement 3: 41 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 3 secs							X	X	X			
Movement 6: 32 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	S	2	2	1	P	2	1	P	2	S
Unadjusted Volume	105	788	136	155	881	116	171	656	121	49	413	78
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
Min/Ped Time Override (sec)	12	24	24	12	20	20	8	25	25	8	22	22
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	105	788	136	155	881	116	171	656	121	49	413	78
Saturation Flow (vph)	1800	3800	Shrd	3500	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.42	0.57	-	0.44	0.59	0.17	0.61	0.52	0.20	0.14	0.43	-
Effective Green (sec)	14	43	-	10	39	39	9	33	33	6	30	-
Split Time (sec)	16	45	-	12	41	41	11	35	35	8	32	-
Min. Time or Ped. Time (sec)	12	24	-	12	20	20	8	25	25	8	22	-
Delay - 15 min pk (sec/veh)	44	23	-	46	26	20	35	29	25	5	29	-
Level of Service (LOS)	D	C+	-	D	C	C+	D+	C	C+	A	C	-
Average 'Q' (veh/ln)	3	7	-	2	7	2	3	6	2	1	5	-
Design 'Q'-ft/ln (1.5*Qavg)	100	220	-	60	220	60	100	180	60	40	160	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.52
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

27

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Berkeley Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 8 secs	X	X	X									
Movement 2: 56 secs		X	X	X	X	X						
Movement 3: 21 secs						X				X	X	X
Movement 4: 15 secs							X	X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	1	2	1	1	1	1	2	1	S
Unadjusted Volume	66	731	10	43	894	376	10	68	38	283	44	53
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
Min/Ped Time Override (sec)	8	24	24	25	25	25	15	15	15	12	24	24
Permissive Veh/Cycle	2											
Progression Adj. Factor (PAF)	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	66	731	10	43	894	376	10	68	38	283	44	53
Saturation Flow (vph)	P/P	3800	Shrd	600	3800	1800	1300	1900	1800	3500	1900	Shrd
X or Volume/Capacity	0.18	0.31	-	0.13	0.44	0.28	0.06	0.28	0.16	0.43	0.15	-
Effective Green (sec)	6	62	-	54	54	75	13	13	13	19	34	-
Split Time (sec)	8	64	-	56	56	77	15	15	15	21	36	-
Min. Time or Ped. Time (sec)	8	24	-	25	25	25	15	15	15	12	24	-
Delay - 15 min pk (sec/veh)	6	9	-	12	15	4	39	42	40	38	23	-
Level of Service (LOS)	A	A	-	B	B	A	D+	D	D	D+	C+	-
Average 'Q' (veh/ln)	1	4	-	1	6	3	1	2	1	3	2	-
Design 'Q'-ft/ln (1.5*Qavg)	40	120	-	40	180	100	40	60	40	100	60	-
Available Storage (ft)	2											
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	21
Level of Service - LOS =	B	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.39
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

27

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Berkeley Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 8 secs	X	X	X									
Movement 2: 58 secs		X	X	X	X	X						
Movement 3: 19 secs						X				X	X	X
Movement 4: 15 secs							X	X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	1	2	1	1	1	1	2	1	S
Unadjusted Volume	82	807	10	39	1162	387	10	62	34	314	75	51
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
Min/Ped Time Override (sec)	8	24	24	25	25	25	15	15	15	12	24	24
Permissive Veh/Cycle	2											
Progression Adj. Factor (PAF)	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	82	807	10	39	1162	387	10	62	34	314	75	51
Saturation Flow (vph)	P/P	3800	Shrd	550	3800	1800	1300	1900	1800	3500	1900	Shrd
X or Volume/Capacity	0.23	0.34	-	0.13	0.55	0.29	0.06	0.25	0.15	0.53	0.21	-
Effective Green (sec)	6	64	-	56	56	75	13	13	13	17	32	-
Split Time (sec)	8	66	-	58	58	77	15	15	15	19	34	-
Min. Time or Ped. Time (sec)	8	24	-	25	25	25	15	15	15	12	24	-
Delay - 15 min pk (sec/veh)	7	9	-	11	15	5	39	42	40	41	26	-
Level of Service (LOS)	A	A	-	B	B	A	D+	D	D+	D	C	-
Average 'Q' (veh/ln)	1	4	-	1	7	3	1	1	1	4	2	-
Design 'Q'-ft/ln (1.5*Qavg)	40	120	-	40	220	100	40	40	40	120	60	-
Available Storage (ft)	2											
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	21
Level of Service - LOS =	B	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.48
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

28

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Raymond Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 8 secs	X			X								
Movement 2: 16 secs				X	X	X						
Movement 3: 38 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 30 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	S	P	1	1	P	2	S
Unadjusted Volume	15	863	155	343	1598	50	116	278	122	135	371	30
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
Min/Ped Time Override (sec)	8	27	27	8	27	27	8	30	30	8	30	30
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	15	863	155	343	1598	50	116	278	122	135	371	30
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	1900	1800	P/P	3800	Shrd
X or Volume/Capacity	0.04	0.74	-	0.68	0.83	-	0.41	0.52	0.24	0.58	0.38	-
Effective Green (sec)	6	36	-	22	52	-	6	28	28	6	28	-
Split Time (sec)	8	38	-	24	54	-	8	30	30	8	30	-
Min. Time or Ped. Time (sec)	8	27	-	8	27	-	8	30	30	8	30	-
Delay - 15 min pk (sec/veh)	5	32	-	35	25	-	21	34	29	32	30	-
Level of Service (LOS)	A	C-	-	D+	C+	-	C+	C-	C	C-	C	-
Average 'Q' (veh/ln)	1	9	-	6	11	-	1	6	2	2	4	-
Design 'Q'-ft/ln (1.5*Qavg)	40	280	-	180	340	-	40	180	60	60	120	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	29	Weighted Average Delay (seconds) =	27
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.67
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

28

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Raymond Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement 1: 8 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 46 secs		X	X		X	X						
Movement 4: 16 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 30 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	1	1	P	2	S
Unadjusted Volume	66	866	284	146	959	88	291	319	262	187	174	155
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
Min/Ped Time Override (sec)	8	27	27	8	27	27	8	30	30	8	30	30
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	66	866	284	146	959	88	291	319	262	187	174	155
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	1900	1800	P/P	3800	Shrd
X or Volume/Capacity	0.18	0.69	-	0.69	0.63	-	0.87	0.60	0.52	0.45	0.31	-
Effective Green (sec)	6	44	-	6	44	-	14	28	28	14	28	-
Split Time (sec)	8	46	-	8	46	-	16	30	30	16	30	-
Min. Time or Ped. Time (sec)	8	27	-	8	27	-	8	30	30	8	30	-
Delay - 15 min pk (sec/veh)	6	25	-	40	23	-	56	36	34	28	29	-
Level of Service (LOS)	A	C+	-	D+	C+	-	E+	D+	C-	C	C	-
Average 'Q' (veh/ln)	1	9	-	2	8	-	6	6	5	3	3	-
Design 'Q'-ft/ln (1.5*Qavg)	40	280	-	60	240	-	180	180	160	100	100	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	30	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.63
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

29

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Acacia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	T	R	L	*T*	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 13 secs				X	X	X						
Movement 3: 54 secs		X	X		X	X						
Movement 4: 25 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	S	1	1	1	1	1	S
Unadjusted Volume	53	864	55	78	1174	44	56	102	66	67	91	34
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
Min/Ped Time Override (sec)	8	22	22	8	67	67	25	25	25	25	25	25
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***					
Peak Hour Volume (vph)	53	864	55	78	1174	44	56	102	66	67	91	34
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	1350	1900	1800	1250	1900	Shrd
X or Volume/Capacity	0.15	0.47	-	0.07	0.49	-	0.18	0.23	0.16	0.23	0.29	-
Effective Green (sec)	6	52	-	19	65	-	23	23	23	23	23	-
Split Time (sec)	8	54	-	21	67	-	25	25	25	25	25	-
Min. Time or Ped. Time (sec)	8	22	-	8	67	-	25	25	25	25	25	-
Delay - 15 min pk (sec/veh)	5	16	-	3	10	-	32	33	32	33	33	-
Level of Service (LOS)	A	B	-	A	A	-	C-	C-	C-	C-	C-	-
Average 'Q' (veh/ln)	1	6	-	1	6	-	1	2	1	1	3	-
Design 'Q'-ft/ln (1.5*Qavg)	40	180	-	40	180	-	40	60	40	40	100	-
Available Storage (ft)	2			2								
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	12
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.42
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

29

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Acacia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	T	R
Movement 1: 8 secs	X			X								
Movement 2: 7 secs				X	X	X						
Movement 3: 60 secs		X	X		X	X						
Movement 4: 25 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	S	1	1	1	1	1	S
Unadjusted Volume	48	1055	37	62	1260	54	113	157	118	62	71	51
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
Min/Ped Time Override (sec)	8	25	25	8	67	67	25	25	25	25	25	25
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***					
Peak Hour Volume (vph)	48	1055	37	62	1260	54	113	157	118	62	71	51
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	1300	1900	1800	1100	1900	Shrd
X or Volume/Capacity	0.13	0.50	-	0.08	0.53	-	0.38	0.36	0.29	0.25	0.28	-
Effective Green (sec)	6	58	-	13	65	-	23	23	23	23	23	-
Split Time (sec)	8	60	-	15	67	-	25	25	25	25	25	-
Min. Time or Ped. Time (sec)	8	25	-	8	67	-	25	25	25	25	25	-
Delay - 15 min pk (sec/veh)	5	13	-	4	10	-	36	35	33	34	33	-
Level of Service (LOS)	A	B	-	A	B	-	D+	C-	C-	C-	C-	-
Average 'Q' (veh/ln)	1	6	-	1	6	-	2	3	3	1	3	-
Design 'Q' -ft/ln (1.5*Qavg)	40	180	-	40	180	-	60	100	100	40	100	-
Available Storage (ft)	2			2								
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	13
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.47
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

30

Existing Traffic with Existing Lane Geometrics

State College Blvd at Chapman Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								X
Movement 2: 4 secs	X	X	X									X
Movement 3: 32 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 7 secs										X	X	X
Movement 6: 33 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	1	2	1	1	2	1	2	2	1
Unadjusted Volume	417	756	155	155	978	300	74	915	56	269	1274	596
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
Min/Ped Time Override (sec)	12	27	27	12	29	29	12	27	27	12	25	25
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	417	756	155	155	978	300	74	915	56	269	1274	596
Saturation Flow (vph)	3500	3800	1800	1800	3800	1800	1800	3800	1800	3500	3800	1800
X or Volume/Capacity	0.85	0.59	0.25	0.86	0.86	0.56	0.41	0.78	0.10	0.45	0.88	0.61
Effective Green (sec)	14	34	34	10	30	30	10	31	31	17	38	54
Split Time (sec)	16	36	36	12	32	32	12	33	33	19	40	56
Min. Time or Ped. Time (sec)	12	27	27	12	29	29	12	27	27	12	25	25
Delay - 15 min pk (sec/veh)	59	29	25	83	41	33	49	36	25	40	37	19
Level of Service (LOS)	E+	C	C+	F	D	C-	D	D+	C+	D+	D+	B
Average 'Q' (veh/ln)	5	7	3	4	10	6	2	9	1	3	11	8
Design 'Q'-ft/ln (1.5*Qavg)	160	220	100	120	300	180	60	280	40	100	340	240
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 38	Weighted Average Delay (seconds) = 43
Level of Service - LOS = D+	Level of Service - LOS = D
Intersection Capacity Utilization - ICU = 0.82	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

30

Existing Traffic with Existing Lane Geometrics

State College Blvd at Chapman Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 13 secs	X			X								X
Movement 2: 4 secs	X	X	X									X
Movement 3: 38 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 6 secs							X	X	X			
Movement 6: 27 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	1	2	1	1	2	1	2	2	1
Unadjusted Volume	434	949	90	167	1186	173	249	986	70	271	800	579
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
Min/Ped Time Override (sec)	12	27	27	12	29	29	12	27	27	12	25	25
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	434	949	90	167	1186	173	249	986	70	271	800	579
Saturation Flow (vph)	3500	3800	1800	1800	3800	1800	1800	3800	1800	3500	3800	1800
X or Volume/Capacity	0.83	0.62	0.13	0.84	0.87	0.27	0.86	0.84	0.13	0.77	0.84	0.77
Effective Green (sec)	15	40	40	11	36	36	16	31	31	10	25	42
Split Time (sec)	17	42	42	13	38	38	18	33	33	12	27	44
Min. Time or Ped. Time (sec)	12	27	27	12	29	29	12	27	27	12	25	25
Delay - 15 min pk (sec/veh)	55	26	19	77	37	24	68	39	25	59	45	32
Level of Service (LOS)	E+	C	B	E-	D+	C+	E	D+	C	E+	D	C-
Average 'Q' (veh/ln)	5	8	2	5	11	3	6	10	1	4	9	9
Design 'Q'-ft/ln (1.5*Qavg)	160	240	60	160	340	100	180	300	40	120	280	280
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 41	Weighted Average Delay (seconds) = 46
Level of Service - LOS = D	Level of Service - LOS = D
Intersection Capacity Utilization - ICU = 0.85	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

31

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Commonwealth Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	T	*R*	L	T	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 8 secs				X	X	X						
Movement 3: 60 secs		X	X		X	X						
Movement 4: 24 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	1	1	1	1	1	2	1
Unadjusted Volume	102	1007	12	152	1393	70	10	205	206	41	70	74
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
Min/Ped Time Override (sec)	8	60	60	8	29	29	24	24	24	24	24	24
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***					
Peak Hour Volume (vph)	102	1007	12	152	1393	70	10	205	206	41	70	74
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	1800	1200	1900	1800	900	3800	1800
X or Volume/Capacity	0.28	0.46	-	0.32	0.56	0.06	0.04	0.49	0.52	0.21	0.08	0.19
Effective Green (sec)	6	58	-	14	66	66	22	22	22	22	22	22
Split Time (sec)	8	60	-	16	68	68	24	24	24	24	24	24
Min. Time or Ped. Time (sec)	8	60	-	8	29	29	24	24	24	24	24	24
Delay - 15 min pk (sec/veh)	15	13	-	22	10	6	31	38	39	34	31	33
Level of Service (LOS)	B	B	-	C+	B	A	C-	D+	D+	C-	C-	C-
Average 'Q' (veh/ln)	1	6	-	2	7	1	1	4	4	1	1	2
Design 'Q'-ft/ln (1.5*Qavg)	40	180	-	60	220	40	40	120	120	40	40	60
Available Storage (ft)	2			2								
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	17	Weighted Average Delay (seconds) =	14
Level of Service - LOS =	B	Level of Service - LOS =	B
Intersection Capacity Utilization - ICU = 0.53			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: NB Shared Through/Right-Turn behaves like NB Exclusive Right-Turn			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

31

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Commonwealth Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	*L*	T	R	L	T	*R*	L	T	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 12 secs				X	X	X						
Movement 3: 48 secs		X	X		X	X						
Movement 4: 32 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	1	1	1	1	1	2	1
Unadjusted Volume	92	1303	28	311	1601	120	29	163	356	51	65	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
Min/Ped Time Override (sec)	8	20	20	8	29	29	24	24	24	24	24	24
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***					
Peak Hour Volume (vph)	92	1303	28	311	1601	120	29	163	356	51	65	73
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	1800	1250	1900	1800	650	3800	1800
X or Volume/Capacity	0.26	0.76	-	0.74	0.73	0.11	0.08	0.29	0.66	0.26	0.06	0.14
Effective Green (sec)	6	46	-	18	58	58	30	30	30	30	30	30
Split Time (sec)	8	48	-	20	60	60	32	32	32	32	32	32
Min. Time or Ped. Time (sec)	8	20	-	8	29	29	24	24	24	24	24	24
Delay - 15 min pk (sec/veh)	11	26	-	41	17	10	25	28	37	30	25	26
Level of Service (LOS)	B	C	-	D	B	A	C	C	D+	C	C	C
Average 'Q' (veh/in)	1	10	-	6	9	1	1	3	7	1	1	1
Design 'Q'-ft/ln (1.5*Qavg)	40	300	-	180	280	40	40	100	220	40	40	40
Available Storage (ft)	2			2								
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	24	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C+	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.72
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: NB Shared Through/Right-Turn behaves like NB Exclusive Right-Turn			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

32

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Placentia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 13 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 34 secs		X	X		X	X						
Movement 4: 13 secs			X				X			X		
Movement 5: 8 secs										X	X	X
Movement 6: 26 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	1	2	1	2	2	S	1	2	S
Unadjusted Volume	154	831	221	121	1118	84	193	520	60	115	595	247
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
Min/Ped Time Override (sec)	12	25	25	12	25	25	12	20	20	12	29	29
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	154	831	221	121	1118	84	193	520	60	115	595	247
Saturation Flow (vph)	3500	3800	1800	1800	3800	1800	3500	3800	Shrd	1800	3800	Shrd
X or Volume/Capacity	0.40	0.68	0.27	0.40	0.77	0.12	0.50	0.64	-	0.34	0.69	-
Effective Green (sec)	11	32	45	17	38	38	11	24	-	19	32	-
Split Time (sec)	13	34	47	19	40	40	13	26	-	21	34	-
Min. Time or Ped. Time (sec)	12	25	25	12	25	25	12	20	-	12	29	-
Delay - 15 min pk (sec/veh)	45	33	18	41	31	21	47	37	-	38	33	-
Level of Service (LOS)	D	C-	B	D	C-	C+	D	D+	-	D+	C-	-
Average 'Q' (veh/ln)	2	8	3	3	10	1	2	6	-	3	8	-
Design 'Q'-ft/ln (1.5*Qavg)	60	240	100	100	300	40	60	180	-	100	240	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.67
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

32

Existing Traffic with Existing Lane Geometrics

Chapman Ave at Placentia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 37 secs		X	X		X	X						
Movement 3: 16 secs			X				X			X		
Movement 4: 6 secs			X				X	X	X			
Movement 5: 29 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	2	1	1	2	1	2	2	S	1	2	S
Unadjusted Volume	269	894	203	102	1054	232	542	625	140	173	392	262
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
Min/Ped Time Override (sec)	12	25	25	12	25	25	12	20	20	12	29	29
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	269	894	203	102	1054	232	542	625	140	173	392	262
Saturation Flow (vph)	3500	3800	1800	1800	3800	1800	3500	3800	Shrd	1800	3800	Shrd
X or Volume/Capacity	0.77	0.67	0.20	0.57	0.79	0.37	0.77	0.61	-	0.69	0.64	-
Effective Green (sec)	10	35	57	10	35	35	20	33	-	14	27	-
Split Time (sec)	12	37	59	12	37	37	22	35	-	16	29	-
Min. Time or Ped. Time (sec)	12	25	25	12	25	25	12	20	-	12	29	-
Delay - 15 min pk (sec/veh)	59	30	11	55	34	26	46	30	-	55	35	-
Level of Service (LOS)	E+	C-	B	E+	C-	C	D	C-	-	E+	D+	-
Average 'Q' (veh/ln)	3	8	2	3	10	4	6	7	-	4	7	-
Design 'Q'-ft/ln (1.5*Qavg)	100	240	60	100	300	120	180	220	-	120	220	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	36	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	D+	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.74
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

33

Existing Traffic with Existing Lane Geometrics

State College Blvd at Nutwood Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 15 secs	X			X	X	X						
Movement 2: 20 secs	X	X	X	X	X	X						
Movement 3: 12 secs						X	X			X		
Movement 4: 14 secs						X				X	X	X
Movement 5: 39 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	S	P	1	1	1	3	S	1	3	S
Unadjusted Volume	114	161	83	267	34	304	85	1355	361	371	1768	108
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
Min/Ped Time Override (sec)	14	14	14	8	29	29	12	28	28	12	18	18
Permissive Veh/Cycle				2								
Progression Adj. Factor (PAF)	1.00	1.00	-	P/P	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	114	161	83	267	34	304	85	1355	361	371	1768	108
Saturation Flow (vph)	700	1900	Shrd	P/P	1900	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	0.90	0.71	-	0.84	0.05	0.29	0.47	0.81	-	0.86	0.65	-
Effective Green (sec)	18	18	-	13	33	59	10	37	-	24	51	-
Split Time (sec)	20	20	-	15	35	61	12	39	-	26	53	-
Min. Time or Ped. Time (sec)	14	14	-	8	29	29	12	28	-	12	18	-
Delay - 15 min pk (sec/veh)	98	51	-	53	23	11	51	32	-	56	19	-
Level of Service (LOS)	F	D-	-	D-	C+	B	D-	C-	-	E+	B	-
Average 'Q' (veh/ln)	3	6	-	5	1	3	2	10	-	8	9	-
Design 'Q'-ft/ln (1.5*Qavg)	100	180	-	160	40	100	60	300	-	240	280	-
Available Storage (ft)				2								
Do Vehicles Clear?	NO	YES	-	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	32	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	C-	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.85
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

33

Existing Traffic with Existing Lane Geometrics

State College Blvd at Nutwood Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 31 secs	X			X	X	X						
Movement 2: 14 secs	X	X	X		X	X						
Movement 3: 12 secs							X			X		
Movement 4: 6 secs										X	X	X
Movement 5: 37 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	1	S	P	1	1	1	3	S	1	3	S
Unadjusted Volume	45	75	68	516	124	396	53	1391	252	245	1226	75
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
Min/Ped Time Override (sec)	14	14	14	8	29	29	12	28	28	12	18	18
Permissive Veh/Cycle				2								
Progression Adj. Factor (PAF)	1.00	1.00	-	P/P	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	45	75	68	516	124	396	53	1391	252	245	1226	75
Saturation Flow (vph)	550	1900	Shrd	P/P	1900	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	0.68	0.63	-	0.85	0.15	0.51	0.29	0.82	-	0.85	0.56	-
Effective Green (sec)	12	12	-	29	43	43	10	35	-	16	41	-
Split Time (sec)	14	14	-	31	45	45	12	37	-	18	43	-
Min. Time or Ped. Time (sec)	14	14	-	8	29	29	12	28	-	12	18	-
Delay - 15 min pk (sec/veh)	87	54	-	42	18	23	46	34	-	67	24	-
Level of Service (LOS)	F	D-	-	D	B	C+	D	C-	-	E	C+	-
Average 'Q' (veh/ln)	1	4	-	9	2	6	1	10	-	6	7	-
Design 'Q'-ft/ln (1.5*Qavg)	40	120	-	280	60	180	40	300	-	180	220	-
Available Storage (ft)				2								
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.82
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

34

Existing Traffic with Existing Lane Geometrics

Nutwood Ave at Commonwealth Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 16 secs		X		X	X				X			
Movement 2: 37 secs		X	X		X							
Movement 3: 47 secs							X		X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)		3	S	P	3		2		2			
Unadjusted Volume		302	48	132	1327		237		352			
Peak Hour Factor (PHF)		1.00	1.00	1.00	1.00		1.00		1.00			
Min/Ped Time Override (sec)		28	28	8	14		29		29			
Permissive Veh/Cycle				3								
Progression Adj. Factor (PAF)		1.00	-	P/P	1.00		1.00		1.00			

Output

	***			***			***		
Peak Hour Volume (vph)	302	48	132	1327		237		352	
Saturation Flow (vph)	5700	Shrd	P/P	5700		3500		3400	
X or Volume/Capacity	0.18	-	0.16	0.46		0.15		0.17	
Effective Green (sec)	35	-	14	51		45		61	
Split Time (sec)	37	-	16	53		47		63	
Min. Time or Ped. Time (sec)	28	-	8	14		29		29	
Delay - 15 min pk (sec/veh)	23	-	7	16		16		9	
Level of Service (LOS)	C+	-	A	B		B		A	
Average 'Q' (veh/ln)	2	-	1	6		2		2	
Design 'Q'-ft/ln (1.5*Qavg)	60	-	40	180		60		60	
Available Storage (ft)			3						
Do Vehicles Clear?	YES	-	YES	YES		YES		YES	

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	15
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.18
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

34

Existing Traffic with Existing Lane Geometrics

Nutwood Ave at Commonwealth Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 8 secs		X		X	X				X			
Movement 2: 63 secs		X	X		X							
Movement 3: 29 secs							X		X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)		3	S	P	3		2		2			
Unadjusted Volume		956	47	130	960		116		202			
Peak Hour Factor (PHF)		1.00	1.00	1.00	1.00		1.00		1.00			
Min/Ped Time Override (sec)		22	22	8	20		29		29			
Permissive Veh/Cycle				3								
Progression Adj. Factor (PAF)		1.00	-	P/P	1.00		1.00		1.00			

Output

	***			***			***		
Peak Hour Volume (vph)	956	47	130	960		116		202	
Saturation Flow (vph)	5700	Shrd	P/P	5700		3500		3400	
X or Volume/Capacity	0.29	-	0.36	0.24		0.12		0.17	
Effective Green (sec)	61	-	6	69		27		35	
Split Time (sec)	63	-	8	71		29		37	
Min. Time or Ped. Time (sec)	22	-	8	20		29		29	
Delay - 15 min pk (sec/veh)	9	-	10	6		28		23	
Level of Service (LOS)	A	-	B	A		C		C+	
Average 'Q' (veh/ln)	4	-	1	3		1		2	
Design 'Q'-ft/ln (1.5*Qavg)	120	-	40	100		40		60	
Available Storage (ft)			3						
Do Vehicles Clear?	YES	-	YES	YES		YES		YES	

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	11	Weighted Average Delay (seconds) =	12
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.25
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

35

Existing Traffic with Existing Lane Geometrics (E/W Ped Ovr)

Placentia Ave at Nutwood Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	L	T*	R	*L*	T	R	L	T	R
Movement Times												
Movement 1: 14 secs	X	X	X									
Movement 2: 14 secs				X	X	X						
Movement 3: 72 secs							X	X	X	X	X	X
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	S	2	1	1	1	S	1	2	S	1	2	S
Unadjusted Volume	303	21	122	84	125	40	156	854	51	10	1054	677
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
Sat. Flow Override (vph)	Shrd	3500				Shrd		Shrd				Shrd
Min/Ped Time Override (sec)	23	23	23	23	23	23	15	15	15	28	28	28
Progression Adj. Factor (PAF)	-	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***					
Peak Hour Volume (vph)	303	21	122	84	125	40	156	854	51	10	1054	677
Saturation Flow (vph)	Shrd	3500	1800	1800	1900	Shrd	300	3800	Shrd	450	3800	Shrd
X or Volume/Capacity	-	0.77	0.56	0.39	0.72	-	0.74	0.34	-	0.03	0.65	-
Effective Green (sec)	-	12	12	12	12	-	70	70	-	70	70	-
Split Time (sec)	-	14	14	14	14	-	72	72	-	72	72	-
Min. Time or Ped. Time (sec)	-	23	23	23	23	-	15	15	-	28	28	-
Delay - 15 min pk (sec/veh)	-	56	52	46	60	-	30	6	-	5	10	-
Level of Service (LOS)	-	E+	D-	D	E	-	C-	A	-	A	A	-
Average 'Q' (veh/ln)	-	4	3	2	4	-	1	4	-	1	7	-
Design 'Q'-ft/ln (1.5*Qavg)	-	120	100	60	120	-	40	120	-	40	220	-
Do Vehicles Clear?	-	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	19	Weighted Average Delay (seconds) =	51
Level of Service - LOS =	B	Level of Service - LOS =	D-
		Intersection Capacity Utilization - ICU =	0.74
Predetermined Cycle Length is 100 sec Min./Ped. Times May Not Be Satisfied Analysis Based on User Selected Splits			
Notes: Placentia Ave EB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

35

Existing Traffic with Existing Lane Geometrics

Placentia Ave at Nutwood Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 27 secs	X	X	X									
Movement 2: 23 secs				X	X	X						
Movement 3: 50 secs							X	X	X	X	X	X
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	S	2	1	1	1	S	1	2	S	1	2	S
Unadjusted Volume	598	57	201	23	55	10	147	938	19	12	622	390
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
Sat. Flow Override (vph)	Shrd	3500				Shrd		Shrd				Shrd
Min/Ped Time Override (sec)	23	23	23	23	23	23	15	15	15	28	28	28
Progression Adj. Factor (PAF)	-	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	598	57	201	23	55	10	147	938	19	12	622	390
Saturation Flow (vph)	Shrd	3500	1800	1800	1900	Shrd	400	3800	Shrd	450	3800	Shrd
X or Volume/Capacity	-	0.75	0.45	0.06	0.16	-	0.77	0.52	-	0.06	0.55	-
Effective Green (sec)	-	25	25	21	21	-	48	48	-	48	48	-
Split Time (sec)	-	27	27	23	23	-	50	50	-	50	50	-
Min. Time or Ped. Time (sec)	-	23	23	23	23	-	15	15	-	28	28	-
Delay - 15 min pk (sec/veh)	-	40	35	32	33	-	46	19	-	14	20	-
Level of Service (LOS)	-	D	C-	C-	C-	-	D	B	-	B	B	-
Average 'Q' (veh/ln)	-	7	4	1	1	-	2	7	-	1	7	-
Design 'Q'-ft/ln (1.5*Qavg)	-	220	120	40	40	-	60	220	-	40	220	-
Do Vehicles Clear?	-	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	27	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	C	Level of Service - LOS =	D
Intersection Capacity Utilization - ICU = 0.63			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Placentia Ave EB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

36

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Dale St

Buena Park

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 43 secs	X	X	X	X	X	X						
Movement 2: 57 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	2	1	1	2	S	1	2	S	1	2	S
Unadjusted Volume	73	333	73	43	398	167	50	224	62	222	472	118
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
Min/Ped Time Override (sec)	26	26	26	26	26	26	26	26	26	26	26	26
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	73	333	73	43	398	167	50	224	62	222	472	118
Saturation Flow (vph)	750	3800	1800	900	3800	Shrd	750	3800	Shrd	1050	3800	Shrd
X or Volume/Capacity	0.24	0.21	0.10	0.12	0.36	-	0.12	0.14	-	0.38	0.28	-
Effective Green (sec)	41	41	41	41	41	-	55	55	-	55	55	-
Split Time (sec)	43	43	43	43	43	-	57	57	-	57	57	-
Min. Time or Ped. Time (sec)	26	26	26	26	26	-	26	26	-	26	26	-
Delay - 15 min pk (sec/veh)	21	19	18	19	21	-	11	11	-	15	12	-
Level of Service (LOS)	C+	B	B	B	C+	-	B	B	-	B	B	-
Average 'Q' (veh/ln)	1	3	1	1	5	-	1	2	-	3	4	-
Design 'Q'-ft/ln (1.5*Qavg)	40	100	40	40	160	-	40	60	-	100	120	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 17	Weighted Average Delay (seconds) = 20
Level of Service - LOS = B	Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.38	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

36

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Dale St

Buena Park

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 60 secs	X	X	X	X	X	X						
Movement 2: 40 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	2	1	1	2	S	1	2	S	1	2	S
Unadjusted Volume	89	339	51	37	453	270	53	316	51	120	216	84
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
Min/Ped Time Override (sec)	26	26	26	26	26	26	26	26	26	26	26	26
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	89	339	51	37	453	270	53	316	51	120	216	84
Saturation Flow (vph)	600	3800	1800	950	3800	Shrd	1050	3800	Shrd	950	3800	Shrd
X or Volume/Capacity	0.26	0.15	0.05	0.07	0.33	-	0.13	0.25	-	0.33	0.21	-
Effective Green (sec)	58	58	58	58	58	-	38	38	-	38	38	-
Split Time (sec)	60	60	60	60	60	-	40	40	-	40	40	-
Min. Time or Ped. Time (sec)	26	26	26	26	26	-	26	26	-	26	26	-
Delay - 15 min pk (sec/veh)	12	10	9	9	11	-	21	22	-	24	21	-
Level of Service (LOS)	B	A	A	A	B	-	C+	C+	-	C+	C+	-
Average 'Q' (veh/ln)	1	2	1	1	4	-	1	3	-	2	3	-
Design 'Q'-ft/ln (1.5*Qavg)	40	60	40	40	120	-	40	100	-	60	100	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	14
Level of Service - LOS =	B	Level of Service - LOS =	B
Intersection Capacity Utilization - ICU = 0.33			
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

31

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Magnolia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	*T*	R	L	T	R
Movement Times												
Movement 1: 12 secs	X			X					X			
Movement 2: 29 secs				X	X	X			X			
Movement 3: 33 secs		X	X		X	X						
Movement 4: 26 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	S	2	2	S	S	1	2	S	1	1
Unadjusted Volume	10	455	141	680	391	10	162	10	500	10	10	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
Min/Ped Time Override (sec)	12	27	27	12	21	21	24	24	24	24	24	24
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	-	1.00	1.00	-	1.00	1.00

Output

	***			***			***					
Peak Hour Volume (vph)	10	455	141	680	391	10	162	10	500	10	10	10
Saturation Flow (vph)	1800	3800	Shrd	3500	3800	Shrd	Shrd	1400	3400	Shrd	1150	1800
X or Volume/Capacity	0.06	0.51	-	0.50	0.18	-	-	0.51	0.23	-	0.07	0.02
Effective Green (sec)	10	31	-	39	60	-	-	24	65	-	24	24
Split Time (sec)	12	33	-	41	62	-	-	26	67	-	26	26
Min. Time or Ped. Time (sec)	12	27	-	12	21	-	-	24	24	-	24	24
Delay - 15 min pk (sec/veh)	41	30	-	24	9	-	-	38	7	-	30	29
Level of Service (LOS)	D	C	-	C+	A	-	-	D+	A	-	C	C
Average 'Q' (veh/in)	1	6	-	6	2	-	-	4	2	-	1	1
Design 'Q'-ft/in (1.5*Qavg)	40	180	-	180	60	-	-	120	60	-	40	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	YES	-	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	21	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C+	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.50
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

31

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Magnolia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 12 secs	X			X					X			
Movement 2: 16 secs				X	X	X			X			
Movement 3: 37 secs		X	X		X	X						
Movement 4: 35 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	S	2	2	S	S	1	2	S	1	1
Unadjusted Volume	10	599	150	517	559	10	245	10	649	17	15	17
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
Min/Ped Time Override (sec)	12	27	27	12	21	21	24	24	24	24	24	24
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	-	1.00	1.00	-	1.00	1.00

Output

	***			***			***					
Peak Hour Volume (vph)	10	599	150	517	559	10	245	10	649	17	15	17
Saturation Flow (vph)	1800	3800	Shrd	3500	3800	Shrd	Shrd	1350	3400	Shrd	950	1800
X or Volume/Capacity	0.06	0.56	-	0.57	0.29	-	-	0.57	0.31	-	0.10	0.03
Effective Green (sec)	10	35	-	26	51	-	-	33	61	-	33	33
Split Time (sec)	12	37	-	28	53	-	-	35	63	-	35	35
Min. Time or Ped. Time (sec)	12	27	-	12	21	-	-	24	24	-	24	24
Delay - 15 min pk (sec/veh)	41	28	-	35	15	-	-	33	10	-	24	23
Level of Service (LOS)	D	C	-	C-	B	-	-	C-	A	-	C+	C+
Average 'Q' (veh/ln)	1	7	-	5	4	-	-	5	4	-	1	1
Design 'Q'-ft/ln (1.5*Qavg)	40	220	-	160	120	-	-	160	120	-	40	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	-	YES	YES	-	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	23	Weighted Average Delay (seconds) =	32
Level of Service - LOS =	C+	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.57
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

38

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Gilbert St

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	L	T*	R	L	T*	R	L	T*	R
Movement 1: 19 secs	X	X	X									X
Movement 2: 27 secs				X	X	X						
Movement 3: 24 secs							X	X	X			
Movement 4: 30 secs						X				X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	S	3	S	1	2	1	S	2	S	S	2	2
Unadjusted Volume	494	391	20	80	213	359	32	332	52	585	396	919
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
Sat. Flow Override (vph)	Shrd		Shrd				Shrd		Shrd	Shrd	3600	
Min/Ped Time Override (sec)	17	17	17	27	27	27	24	24	24	24	24	24
Progression Adj. Factor (PAF)	-	1.00	-	1.00	1.00	1.00	-	1.00	-	-	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	494	391	20	80	213	359	32	332	52	585	396	919
Saturation Flow (vph)	Shrd	5700	Shrd	1800	3800	1800	Shrd	3800	Shrd	Shrd	3600	3400
X or Volume/Capacity	-	0.93	-	0.18	0.22	0.36	-	0.50	-	-	0.97	0.58
Effective Green (sec)	-	17	-	25	25	55	-	22	-	-	28	47
Split Time (sec)	-	19	-	27	27	57	-	24	-	-	30	49
Min. Time or Ped. Time (sec)	-	17	-	27	27	27	-	24	-	-	24	24
Delay - 15 min pk (sec/veh)	-	58	-	30	30	14	-	36	-	-	58	21
Level of Service (LOS)	-	E+	-	C-	C-	B	-	D+	-	-	E+	C+
Average 'Q' (veh/ln)	-	7	-	2	2	4	-	5	-	-	11	7
Design 'Q'-ft/ln (1.5*Qavg)	-	220	-	60	60	120	-	160	-	-	340	220
Do Vehicles Clear?	-	YES	-	YES	YES	YES	-	YES	-	-	NO	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 41	Weighted Average Delay (seconds) = 53
Level of Service - LOS = D	Level of Service - LOS = D-
Intersection Capacity Utilization - ICU = 0.65	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Commonwealth Ave EB Approach is 1 left-turn, 1 shared left-turn/through, 1 shared through/right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

38

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Gilbert St

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 23 secs	X	X	X									X
Movement 2: 27 secs				X	X	X						
Movement 3: 24 secs							X	X	X			
Movement 4: 26 secs						X				X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	1	S	1	2	1	S	2	S	1	1	2
Unadjusted Volume	641	313	18	98	446	532	29	483	83	393	338	649
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
Min/Ped Time Override (sec)	17	17	17	27	27	27	24	24	24	24	24	24
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	-	1.00	-	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	641	313	18	98	446	532	29	483	83	393	338	649
Saturation Flow (vph)	3500	1900	Shrd	1800	3800	1800	Shrd	3800	Shrd	1800	1900	3400
X or Volume/Capacity	0.87	0.83	-	0.22	0.47	0.58	-	0.71	-	0.91	0.74	0.41
Effective Green (sec)	21	21	-	25	25	51	-	22	-	24	24	47
Split Time (sec)	23	23	-	27	27	53	-	24	-	26	26	49
Min. Time or Ped. Time (sec)	17	17	-	27	27	27	-	24	-	24	24	24
Delay - 15 min pk (sec/veh)	52	56	-	31	34	20	-	41	-	63	46	18
Level of Service (LOS)	D-	E+	-	C-	C-	B	-	D	-	E	D	B
Average 'Q' (veh/ln)	7	8	-	2	5	7	-	6	-	9	7	5
Design 'Q'-ft/ln (1.5*Qavg)	220	240	-	60	160	220	-	180	-	280	220	160
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	-	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	39	Weighted Average Delay (seconds) =	47
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.73
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Commonwealth Ave EB Approach is 1 left-turn, 1 shared left-turn/through, 1 shared through/right-turn			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

39

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Brookhurst Rd

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X					X			
Movement 2: 26 secs				X	X	X			X			
Movement 3: 25 secs		X	X		X	X						
Movement 4: 25 secs			X				X		X			
Movement 5: 12 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	S	2		1	1	1	S
Unadjusted Volume	10	422	570	454	413	10	403		415	10	10	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
Min/Ped Time Override (sec)	12	23	23	12	20	20	23		23	12	12	12
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00		1.00	1.00	1.00	-

Output

Peak Hour Volume (vph)	10	422	570	454	413	10	403		415	10	10	10
Saturation Flow (vph)	1800	3800	1800	1800	3800	Shrd	3500		1800	1800	1900	Shrd
X or Volume/Capacity	0.06	0.48	0.66	0.70	0.23	-	0.50		0.38	0.06	0.11	-
Effective Green (sec)	10	23	48	36	49	-	23		61	10	10	-
Split Time (sec)	12	25	50	38	51	-	25		63	12	12	-
Min. Time or Ped. Time (sec)	12	23	23	12	20	-	23		23	12	12	-
Delay - 15 min pk (sec/veh)	41	35	24	34	15	-	36		11	41	42	-
Level of Service (LOS)	D	D+	C+	C-	B	-	D+		B	D	D	-
Average 'Q' (veh/ln)	1	5	8	8	3	-	4		4	1	1	-
Design 'Q'-ft/ln (1.5*Qavg)	40	160	240	240	100	-	120		120	40	40	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES		YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 26	Weighted Average Delay (seconds) = 35
Level of Service - LOS = C	Level of Service - LOS = C-
Intersection Capacity Utilization - ICU = 0.53	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Brookhurst Rd NB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

39

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Brookhurst Rd

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	T*	R	*L*	T	R	*L*	T	R	L	T*	R
Movement 1: 12 secs	X			X					X			
Movement 2: 23 secs				X	X	X			X			
Movement 3: 24 secs		X	X		X	X						
Movement 4: 29 secs			X				X	X				
Movement 5: 12 secs										X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	S	2	1	1	1	1	S
Unadjusted Volume	10	463	423	351	534	10	546	388	12	12	12	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
Min/Ped Time Override (sec)	12	23	23	12	20	20	23	23	12	12	12	12
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

		***	***	***	***	***	***	***	***	***	***
Peak Hour Volume (vph)	10	463	423	351	534	10	546	388	12	12	10
Saturation Flow (vph)	1800	3800	1800	1800	3800	Shrd	3500	1800	1800	1900	Shrd
X or Volume/Capacity	0.06	0.55	0.46	0.59	0.32	-	0.58	0.35	0.07	0.12	-
Effective Green (sec)	10	22	51	33	45	-	27	62	10	10	-
Split Time (sec)	12	24	53	35	47	-	29	64	12	12	-
Min. Time or Ped. Time (sec)	12	23	23	12	20	-	23	23	12	12	-
Delay - 15 min pk (sec/veh)	41	37	17	32	18	-	34	10	41	42	-
Level of Service (LOS)	D	D+	B	C-	B	-	C-	B	D	D	-
Average 'Q' (veh/ln)	1	5	6	7	4	-	6	4	1	1	-
Design 'Q'-ft/ln (1.5*Qavg)	40	160	180	220	120	-	180	120	40	40	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	26	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C	Level of Service - LOS =	C-
Intersection Capacity Utilization - ICU = 0.53			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Brookhurst Rd NB Approach is 1 left-turn, 1 shared left-turn/through, 1 right-turn			

WEBSTER
WEBster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

40

Existing Conditions with Existing Lane Geometrics

Euclid St at Commonwealth Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 11 secs	X			X								
Movement 2: 27 secs		X	X		X	X						
Movement 3: 8 secs							X			X		
Movement 4: 8 secs										X	X	X
Movement 5: 46 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	1	P	2	S
Unadjusted Volume	122	394	83	197	324	70	72	1321	114	111	1584	113
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
Min/Ped Time Override (sec)	8	24	24	8	24	24	8	22	22	8	22	22
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	122	394	83	197	324	70	72	1321	114	111	1584	113
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.31	0.50	-	0.77	0.41	-	0.20	0.79	0.14	0.16	0.86	-
Effective Green (sec)	9	25	-	9	25	-	6	44	44	14	52	-
Split Time (sec)	11	27	-	11	27	-	8	46	46	16	54	-
Min. Time or Ped. Time (sec)	8	24	-	8	24	-	8	22	22	8	22	-
Delay - 15 min pk (sec/veh)	19	34	-	48	33	-	6	28	17	14	26	-
Level of Service (LOS)	B	C-	-	D	C-	-	A	C	B	B	C	-
Average 'Q' (veh/ln)	1	5	-	3	4	-	1	10	2	1	11	-
Design 'Q'-ft/ln (1.5*Qavg)	40	160	-	100	120	-	40	300	60	40	340	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.71
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

40

Existing Conditions with Existing Lane Geometrics

Euclid St at Commonwealth Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement 1: 13 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 24 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 1 secs							X	X	X			
Movement 6: 54 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	1	P	2	S
Unadjusted Volume	160	394	91	231	393	123	93	1591	184	90	1351	109
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
Min/Ped Time Override (sec)	13	24	24	8	24	24	8	22	22	8	22	22
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

		***			***			***			***		
Peak Hour Volume (vph)	160	394	91	231	393	123	93	1591	184	90	1351	109	
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	1800	P/P	3800	Shrd	
X or Volume/Capacity	0.45	0.58	-	0.81	0.62	-	0.22	0.79	0.19	0.25	0.74	-	
Effective Green (sec)	11	22	-	11	22	-	7	53	53	6	52	-	
Split Time (sec)	13	24	-	13	24	-	9	55	55	8	54	-	
Min. Time or Ped. Time (sec)	13	24	-	8	24	-	8	22	22	8	22	-	
Delay - 15 min pk (sec/veh)	27	38	-	51	39	-	11	22	13	11	21	-	
Level of Service (LOS)	C	D+	-	D-	D+	-	B	C+	B	B	C+	-	
Average 'Q' (veh/ln)	2	5	-	4	6	-	1	10	2	1	10	-	
Design 'Q'-ft/ln (1.5*Qavg)	60	160	-	120	180	-	40	300	60	40	300	-	
Available Storage (ft)	2			2			2			2			
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-	

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	27	Weighted Average Delay (seconds) =	28
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.71
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

41

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Highland Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 53 secs	X	X	X	X	X	X						
Movement 2: 47 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	2	1	1	2	1	1	1	S	1	1	S
Unadjusted Volume	39	728	52	71	377	28	57	170	144	50	206	28
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
Min/Ped Time Override (sec)	15	15	15	15	15	15	22	22	22	22	22	22
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	39	728	52	71	377	28	57	170	144	50	206	28
Saturation Flow (vph)	900	3800	1800	550	3800	1800	1350	1900	Shrd	1100	1900	Shrd
X or Volume/Capacity	0.08	0.38	0.06	0.25	0.19	0.03	0.09	0.37	-	0.10	0.27	-
Effective Green (sec)	51	51	51	51	51	51	45	45	-	45	45	-
Split Time (sec)	53	53	53	53	53	53	47	47	-	47	47	-
Min. Time or Ped. Time (sec)	15	15	15	15	15	15	22	22	-	22	22	-
Delay - 15 min pk (sec/veh)	13	15	12	16	14	12	16	19	-	16	18	-
Level of Service (LOS)	B	B	B	B	B	B	B	B	-	B	B	-
Average 'Q' (veh/ln)	1	5	1	1	3	1	1	5	-	1	4	-
Design 'Q'-ft/ln (1.5*Qavg)	40	160	40	40	100	40	40	160	-	40	120	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	16	Weighted Average Delay (seconds) =	17
Level of Service - LOS =	B	Level of Service - LOS =	B
Intersection Capacity Utilization - ICU = 0.37			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			
Notes: Commonwealth Ave EB Approach is 1 left-turn, 1 through, and 1 wide shared through/right-turn			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

41

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Highland Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 59 secs	X	X	X	X	X	X						
Movement 2: 41 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	2	1	1	2	1	1	1	S	1	1	S
Unadjusted Volume	79	680	85	173	1107	92	116	266	102	59	251	50
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
Min/Ped Time Override (sec)	15	15	15	15	15	15	22	22	22	22	22	22
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	79	680	85	173	1107	92	116	266	102	59	251	50
Saturation Flow (vph)	300	3800	1800	600	3800	1800	1300	1900	Shrd	1200	1900	Shrd
X or Volume/Capacity	0.46	0.31	0.08	0.51	0.51	0.09	0.23	0.50	-	0.13	0.41	-
Effective Green (sec)	57	57	57	57	57	57	39	39	-	39	39	-
Split Time (sec)	59	59	59	59	59	59	41	41	-	41	41	-
Min. Time or Ped. Time (sec)	15	15	15	15	15	15	22	22	-	22	22	-
Delay - 15 min pk (sec/veh)	21	12	10	18	14	10	21	25	-	20	24	-
Level of Service (LOS)	C+	B	A	B	B	A	C+	C	-	C+	C+	-
Average 'Q' (veh/ln)	1	4	1	2	7	1	2	6	-	1	5	-
Design 'Q'-ft/ln (1.5*Qavg)	40	120	40	60	220	40	60	180	-	40	160	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 17	Weighted Average Delay (seconds) = 17
Level of Service - LOS = B	Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.51	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	
Notes: Commonwealth Ave EB Approach is 1 left-turn, 1 through, and 1 wide shared through/right-turn	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

42

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Commonwealth Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	*L*	T	R	*L*	T	R	L	T*	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 12 secs	X	X	X									
Movement 3: 22 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 18 secs										X	X	X
Movement 6: 32 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	1	P	2	1	P	2	1	P	2	S
Unadjusted Volume	189	793	66	92	451	45	32	666	94	137	1062	113
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
Min/Ped Time Override (sec)	8	25	25	8	19	19	8	27	27	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	189	793	66	92	451	45	32	666	94	137	1062	113
Saturation Flow (vph)	P/P	3800	1800	P/P	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.36	0.65	0.11	0.26	0.59	0.13	0.09	0.58	0.17	0.15	0.64	-
Effective Green (sec)	18	32	32	6	20	20	6	30	30	24	48	-
Split Time (sec)	20	34	34	8	22	22	8	32	32	26	50	-
Min. Time or Ped. Time (sec)	8	25	25	8	19	19	8	27	27	8	26	-
Delay - 15 min pk (sec/veh)	24	32	24	11	40	34	5	32	27	15	21	-
Level of Service (LOS)	C+	C	C+	B	D+	C-	A	C-	C	B	C+	-
Average 'Q' (veh/ln)	3	7	1	1	5	1	1	6	2	1	8	-
Design 'Q'-ft/ln (1.5*Qavg)	100	220	40	40	160	40	40	180	60	40	240	-
Available Storage (ft)	2			2			2			2		-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C	Level of Service - LOS =	C+
Intersection Capacity Utilization - ICU = 0.59			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

42

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at Commonwealth Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L*	T	R	L	T*	R	L*	T	R	L	T*	R
Movement 1: 8 secs	X			X								
Movement 2: 5 secs				X	X	X						
Movement 3: 29 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 50 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	1	P	2	1	P	2	1	P	2	S
Unadjusted Volume	139	673	152	186	796	74	136	1072	164	121	1066	112
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
Min/Ped Time Override (sec)	8	25	25	8	19	19	8	27	27	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	139	673	152	186	796	74	136	1072	164	121	1066	112
Saturation Flow (vph)	P/P	3800	1800	P/P	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.62	0.66	0.31	0.57	0.65	0.13	0.59	0.59	0.19	0.45	0.65	-
Effective Green (sec)	6	27	27	11	32	32	6	48	48	6	48	-
Split Time (sec)	8	29	29	13	34	34	8	50	50	8	50	-
Min. Time or Ped. Time (sec)	8	25	25	8	19	19	8	27	27	8	26	-
Delay - 15 min pk (sec/veh)	34	36	31	33	32	25	32	20	15	24	21	-
Level of Service (LOS)	C-	D+	C-	C-	C-	C+	C-	C+	B	C+	C+	-
Average 'Q' (veh/ln)	2	7	3	3	8	1	2	8	2	1	9	-
Design 'Q'-ft/ln (1.5*Qavg)	60	220	100	100	240	40	60	240	60	40	280	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	27	Weighted Average Delay (seconds) =	27
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.64
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

43

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Lemon St

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 4 secs				X	X	X						
Movement 3: 33 secs		X	X		X	X						
Movement 4: 9 secs							X			X		
Movement 5: 42 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	2	2	1	P	2	1	P	2	S
Unadjusted Volume	74	650	259	262	557	49	124	727	142	54	951	63
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
Min/Ped Time Override (sec)	12	24	24	12	24	24	8	28	28	8	28	28
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	74	650	259	262	557	49	124	727	142	54	951	63
Saturation Flow (vph)	1800	3800	1800	3500	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.41	0.55	0.46	0.53	0.42	0.08	0.41	0.48	0.20	0.13	0.67	-
Effective Green (sec)	10	31	31	14	35	35	7	40	40	7	40	-
Split Time (sec)	12	33	33	16	37	37	9	42	42	9	42	-
Min. Time or Ped. Time (sec)	12	24	24	12	24	24	8	28	28	8	28	-
Delay - 15 min pk (sec/veh)	49	31	31	44	26	22	23	23	20	5	27	-
Level of Service (LOS)	D	C-	C-	D	C	C+	C+	C+	C+	A	C	-
Average 'Q' (veh/ln)	2	6	5	3	5	1	1	6	2	1	8	-
Design 'Q'-ft/ln (1.5*Qavg)	60	180	160	100	160	40	40	180	60	40	240	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	31
Level of Service - LOS =	C	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.59
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

43

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Lemon St

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 9 secs				X	X	X						
Movement 3: 31 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 4 secs							X	X	X			
Movement 6: 36 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	1	2	2	1	P	2	1	P	2	S
Unadjusted Volume	107	648	176	249	855	76	176	815	170	43	582	87
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
Min/Ped Time Override (sec)	12	24	24	12	24	24	8	28	28	8	28	28
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	107	648	176	249	855	76	176	815	170	43	582	87
Saturation Flow (vph)	1800	3800	1800	3500	3800	1800	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.59	0.59	0.34	0.37	0.59	0.11	0.58	0.56	0.25	0.12	0.52	-
Effective Green (sec)	10	29	29	19	38	38	10	38	38	6	34	-
Split Time (sec)	12	31	31	21	40	40	12	40	40	8	36	-
Min. Time or Ped. Time (sec)	12	24	24	12	24	24	8	28	28	8	28	-
Delay - 15 min pk (sec/veh)	57	33	30	37	27	20	33	26	22	5	28	-
Level of Service (LOS)	E+	C-	C	D+	C	C+	C-	C	C+	A	C	-
Average 'Q' (veh/ln)	3	6	3	3	7	1	3	7	3	1	6	-
Design 'Q'-ft/ln (1.5*Qavg)	100	180	100	100	220	40	100	220	100	40	180	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	30	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
Predetermined Cycle Length is 100 sec		Intersection Capacity Utilization - ICU = 0.56	
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

44

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Raymond Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times	X			X								
Movement 1: 8 secs	X			X								
Movement 2: 7 secs	X	X	X									
Movement 3: 39 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 7 secs							X	X	X			
Movement 6: 31 secs								X	X	X	X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	211	641	216	139	689	107	206	319	55	56	522	110
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
Min/Ped Time Override (sec)	8	23	23	8	23	23	8	23	23	8	23	23
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	211	641	216	139	689	107	206	319	55	56	522	110
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.59	0.51	-	0.62	0.57	-	0.58	0.27	-	0.16	0.57	-
Effective Green (sec)	13	44	-	6	37	-	13	36	-	6	29	-
Split Time (sec)	15	46	-	8	39	-	15	38	-	8	31	-
Min. Time or Ped. Time (sec)	8	23	-	8	23	-	8	23	-	8	23	-
Delay - 15 min pk (sec/veh)	34	21	-	34	27	-	33	23	-	5	32	-
Level of Service (LOS)	C-	C+	-	C-	C	-	C-	C+	-	A	C-	-
Average 'Q' (veh/in)	3	7	-	2	7	-	3	3	-	1	6	-
Design 'Q'-ft/in (1.5*Qavg)	100	220	-	60	220	-	100	100	-	40	180	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	27	Weighted Average Delay (seconds) =	31
Level of Service - LOS =	C	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.57
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

44

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Raymond Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 8 secs	X			X								
Movement 2: 5 secs	X	X	X									
Movement 3: 39 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 16 secs							X	X	X			
Movement 6: 24 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	195	705	137	85	884	47	266	794	132	41	340	132
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
Min/Ped Time Override (sec)	8	23	23	8	23	23	8	23	23	8	23	23
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	195	705	137	85	884	47	266	794	132	41	340	132
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.62	0.53	-	0.24	0.66	-	0.49	0.64	-	0.11	0.56	-
Effective Green (sec)	11	42	-	6	37	-	22	38	-	6	22	-
Split Time (sec)	13	44	-	8	39	-	24	40	-	8	24	-
Min. Time or Ped. Time (sec)	8	23	-	8	23	-	8	23	-	8	23	-
Delay - 15 min pk (sec/veh)	36	23	-	8	29	-	28	28	-	5	37	-
Level of Service (LOS)	D+	C+	-	A	C	-	C	C	-	A	D+	-
Average 'Q' (veh/ln)	3	7	-	1	8	-	4	8	-	1	5	-
Design 'Q'-ft/ln (1.5*Qavg)	100	220	-	40	240	-	120	240	-	40	160	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.61
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

45

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Acacia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 58 secs	X	X	X	X	X	X						
Movement 2: 42 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	2	S	1	2	S	1	1	1	1	1	1
Unadjusted Volume	74	437	117	33	311	19	41	84	23	10	179	84
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
Min/Ped Time Override (sec)	25	25	25	25	25	25	25	25	25	25	25	25
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	74	437	117	33	311	19	41	84	23	10	179	84
Saturation Flow (vph)	1000	3800	Shrd	750	3800	Shrd	1200	1900	1800	1350	1900	1800
X or Volume/Capacity	0.13	0.26	-	0.08	0.16	-	0.09	0.11	0.03	0.02	0.24	0.12
Effective Green (sec)	56	56	-	56	56	-	40	40	40	40	40	40
Split Time (sec)	58	58	-	58	58	-	42	42	42	42	42	42
Min. Time or Ped. Time (sec)	25	25	-	25	25	-	25	25	25	25	25	25
Delay - 15 min pk (sec/veh)	11	12	-	10	11	-	19	19	18	18	21	19
Level of Service (LOS)	B	B	-	B	B	-	B	B	B	B	C+	B
Average 'Q' (veh/ln)	1	3	-	1	2	-	1	1	1	1	3	1
Design 'Q'-ft/ln (1.5*Qavg)	40	100	-	40	60	-	40	40	40	40	100	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 14	Weighted Average Delay (seconds) = 14
Level of Service - LOS = B	Level of Service - LOS = B
	Intersection Capacity Utilization - ICU = 0.25
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

45

Existing Traffic with Existing Lane Geometrics

Commonwealth Ave at Acacia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 65 secs	X	X	X	X	X	X						
Movement 2: 35 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	2	S	1	2	S	1	1	1	1	1	1
Unadjusted Volume	63	532	52	23	631	34	113	176	79	20	106	69
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
Min/Ped Time Override (sec)	25	25	25	25	25	25	25	25	25	25	25	25
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	63	532	52	23	631	34	113	176	79	20	106	69
Saturation Flow (vph)	650	3800	Shrd	750	3800	Shrd	1250	1900	1800	1200	1900	1800
X or Volume/Capacity	0.15	0.24	-	0.05	0.28	-	0.27	0.28	0.13	0.05	0.17	0.12
Effective Green (sec)	63	63	-	63	63	-	33	33	33	33	33	33
Split Time (sec)	65	65	-	65	65	-	35	35	35	35	35	35
Min. Time or Ped. Time (sec)	25	25	-	25	25	-	25	25	25	25	25	25
Delay - 15 min pk (sec/veh)	8	8	-	7	9	-	26	26	24	23	24	24
Level of Service (LOS)	A	A	-	A	A	-	C	C	C+	C+	C+	C+
Average 'Q' (veh/in)	1	3	-	1	3	-	2	3	1	1	2	1
Design 'Q'-ft/in (1.5*Qavg)	40	100	-	40	100	-	60	100	40	40	60	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	14	Weighted Average Delay (seconds) =	13
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.28
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

46

Existing Traffic with Existing Lane Geometrics

State College Blvd at Commonwealth Ave Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 3 secs	X	X	X									
Movement 3: 25 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 56 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	191	309	154	99	290	27	127	761	69	50	1268	213
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
Min/Ped Time Override (sec)	8	25	25	8	25	25	8	26	26	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	191	309	154	99	290	27	127	761	69	50	1268	213
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.73	0.47	-	0.28	0.36	-	0.51	0.40	-	0.14	0.72	-
Effective Green (sec)	9	26	-	6	23	-	6	54	-	6	54	-
Split Time (sec)	11	28	-	8	25	-	8	56	-	8	56	-
Min. Time or Ped. Time (sec)	8	25	-	8	25	-	8	26	-	8	26	-
Delay - 15 min pk (sec/veh)	44	33	-	14	34	-	27	14	-	5	20	-
Level of Service (LOS)	D	C-	-	B	C-	-	C	B	-	A	B	-
Average 'Q' (veh/ln)	3	5	-	1	3	-	1	5	-	1	9	-
Design 'Q'-ft/ln (1.5*Qavg)	100	160	-	40	100	-	40	160	-	40	280	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	23	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C+	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.62
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

46

Existing Traffic with Existing Lane Geometrics

State College Blvd at Commonwealth Ave Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 12 secs	X			X								
Movement 2: 5 secs	X	X	X									
Movement 3: 25 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 7 secs							X	X	X			
Movement 6: 43 secs							X	X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	255	444	55	172	366	39	222	1173	123	59	766	241
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
Min/Ped Time Override (sec)	8	25	25	8	25	25	8	26	26	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	255	444	55	172	366	39	222	1173	123	59	766	241
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.68	0.47	-	0.55	0.46	-	0.64	0.71	-	0.16	0.65	-
Effective Green (sec)	15	28	-	10	23	-	13	48	-	6	41	-
Split Time (sec)	17	30	-	12	25	-	15	50	-	8	43	-
Min. Time or Ped. Time (sec)	8	25	-	8	25	-	8	26	-	8	26	-
Delay - 15 min pk (sec/veh)	38	31	-	32	35	-	37	23	-	5	26	-
Level of Service (LOS)	D+	C-	-	C-	C-	-	D+	C+	-	A	C	-
Average 'Q' (veh/ln)	4	5	-	3	4	-	4	9	-	1	8	-
Design 'Q'-ft/ln (1.5*Qavg)	120	160	-	100	120	-	120	280	-	40	240	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	27
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.61
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

47

Existing Traffic with Existing Lane Geometrics

Magnolia Ave at Valencia Dr

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	*R*	L	T	R	*L*	T	R	L	T	R
Movement 1: 25 secs	X	X	X	X	X	X						
Movement 2: 75 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)	S	2	1	S	2	1	1	2	S	1	2	S
Unadjusted Volume	25	180	219	78	105	33	170	894	124	35	892	25
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
Min/Ped Time Override (sec)	24	24	24	24	24	24	24	24	24	24	24	24
Progression Adj. Factor (PAF)	-	1.00	1.00	-	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	25	180	219	78	105	33	170	894	124	35	892	25
Saturation Flow (vph)	Shrd	3700	1800	Shrd	3200	1800	450	3800	Shrd	400	3800	Shrd
X or Volume/Capacity	-	0.24	0.53	-	0.25	0.08	0.52	0.37	-	0.12	0.33	-
Effective Green (sec)	-	23	23	-	23	23	73	73	-	73	73	-
Split Time (sec)	-	25	25	-	25	25	75	75	-	75	75	-
Min. Time or Ped. Time (sec)	-	24	24	-	24	24	24	24	-	24	24	-
Delay - 15 min pk (sec/veh)	-	32	39	-	32	31	12	5	-	5	5	-
Level of Service (LOS)	-	C-	D+	-	C-	C-	B	A	-	A	A	-
Average 'Q' (veh/ln)	-	2	5	-	2	1	1	4	-	1	3	-
Design 'Q'-ft/ln (1.5*Qavg)	-	60	160	-	60	40	40	120	-	40	100	-
Do Vehicles Clear?	-	YES	YES	-	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	13	Weighted Average Delay (seconds) =	27
Level of Service - LOS =	B	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.52
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

47

Existing Traffic with Existing Lane Geometrics

Magnolia Ave at Valencia Dr

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	T	*R*	L	T	R	*L*	T	R	L	T	R
Movement 1: 24 secs	X	X	X	X	X	X						
Movement 2: 76 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)	S	2	1	S	2	1	1	2	S	1	2	S
Unadjusted Volume	12	125	244	71	148	40	195	853	95	35	1016	29
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
Min/Ped Time Override (sec)	24	24	24	24	24	24	24	24	24	24	24	24
Progression Adj. Factor (PAF)	-	1.00	1.00	-	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	12	125	244	71	148	40	195	853	95	35	1016	29
Saturation Flow (vph)	Shrd	3700	1800	Shrd	3350	1800	350	3800	Shrd	450	3800	Shrd
X or Volume/Capacity	-	0.17	0.62	-	0.30	0.10	0.75	0.34	-	0.11	0.37	-
Effective Green (sec)	-	22	22	-	22	22	74	74	-	74	74	-
Split Time (sec)	-	24	24	-	24	24	76	76	-	76	76	-
Min. Time or Ped. Time (sec)	-	24	24	-	24	24	24	24	-	24	24	-
Delay - 15 min pk (sec/veh)	-	32	42	-	34	32	26	5	-	4	5	-
Level of Service (LOS)	-	C-	D	-	C-	C-	C	A	-	A	A	-
Average 'Q' (veh/ln)	-	1	5	-	2	1	2	3	-	1	4	-
Design 'Q'-ft/ln (1.5*Qavg)	-	40	160	-	60	40	60	100	-	40	120	-
Do Vehicles Clear?	-	YES	YES	-	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 14	Weighted Average Delay (seconds) = 35
Level of Service - LOS = B	Level of Service - LOS = C-
	Intersection Capacity Utilization - ICU = 0.72
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

48

Existing Traffic with Existing Lane Geometrics

Brookhurst Rd at Valencia Dr

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	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: 7 secs	X	X	X									
Movement 3: 26 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 1 secs										X	X	X
Movement 6: 48 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	156	418	182	146	176	102	94	700	126	98	845	57
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
Min/Ped Time Override (sec)	8	26	26	8	26	26	8	26	26	8	26	26
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	156	418	182	146	176	102	94	700	126	98	845	57
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.31	0.51	-	0.51	0.30	-	0.26	0.47	-	0.23	0.51	-
Effective Green (sec)	15	31	-	8	24	-	6	46	-	7	47	-
Split Time (sec)	17	33	-	10	26	-	8	48	-	9	49	-
Min. Time or Ped. Time (sec)	8	26	-	8	26	-	8	26	-	8	26	-
Delay - 15 min pk (sec/veh)	22	30	-	29	32	-	12	20	-	13	19	-
Level of Service (LOS)	C+	C	-	C	C-	-	B	B	-	B	B	-
Average 'Q' (veh/ln)	2	6	-	2	3	-	1	6	-	1	7	-
Design 'Q'-ft/ln (1.5*Qavg)	60	180	-	60	100	-	40	180	-	40	220	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	23	Weighted Average Delay (seconds) =	24
Level of Service - LOS =	C+	Level of Service - LOS =	C+
Intersection Capacity Utilization - ICU = 0.49			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

48

Existing Traffic with Existing Lane Geometrics

Brookhurst Rd at Valencia Dr

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement 1: 8 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 26 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 52 secs								X	X		X	X
# of Lanes (#, S, P)	P	2	S	P	2	S	P	2	S	P	2	S
Unadjusted Volume	93	249	110	155	230	80	94	719	79	93	673	62
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
Min/Ped Time Override (sec)	8	26	26	8	26	26	8	26	26	8	52	52
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	93	249	110	155	230	80	94	719	79	93	673	62
Saturation Flow (vph)	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.26	0.39	-	0.39	0.27	-	0.26	0.42	-	0.26	0.39	-
Effective Green (sec)	6	24	-	12	30	-	6	50	-	6	50	-
Split Time (sec)	8	26	-	14	32	-	8	52	-	8	52	-
Min. Time or Ped. Time (sec)	8	26	-	8	26	-	8	26	-	8	52	-
Delay - 15 min pk (sec/veh)	12	33	-	25	27	-	12	17	-	12	16	-
Level of Service (LOS)	B	C-	-	C+	C	-	B	B	-	B	B	-
Average 'Q' (veh/ln)	1	4	-	2	3	-	1	6	-	1	5	-
Design 'Q'-ft/ln (1.5*Qavg)	40	120	-	60	100	-	40	180	-	40	160	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	20	Weighted Average Delay (seconds) =	22
Level of Service - LOS =	B	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.40
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

49

Existing Traffic with Existing Lane Geometrics

Euclid St at Valencia Dr

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 8 secs	X			X								
Movement 2: 5 secs	X	X	X									
Movement 3: 25 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 8 secs										X	X	X
Movement 6: 46 secs								X	X		X	X
# of Lanes (#, S, P)	P	1	1	P	1	1	P	2	S	P	2	S
Unadjusted Volume	257	217	78	107	195	82	53	1239	148	109	1608	174
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
Min/Ped Time Override (sec)	8	25	25	8	25	25	8	28	28	8	28	28
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-	P/P	1.00	-

Output

Peak Hour Volume (vph)	257	217	78	107	195	82	53	1239	148	109	1608	174
Saturation Flow (vph)	P/P	1900	1800	P/P	1900	1800	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.93	0.41	0.15	0.32	0.45	0.20	0.15	0.83	-	0.15	0.90	-
Effective Green (sec)	11	28	28	6	23	23	6	44	-	14	52	-
Split Time (sec)	13	30	30	8	25	25	8	46	-	16	54	-
Min. Time or Ped. Time (sec)	8	25	25	8	25	25	8	28	-	8	28	-
Delay - 15 min pk (sec/veh)	72	32	28	17	36	32	5	30	-	13	29	-
Level of Service (LOS)	E	C-	C	B	D+	C-	A	C	-	B	C	-
Average 'Q' (veh/ln)	5	4	2	1	4	2	1	11	-	1	12	-
Design 'Q'-ft/ln (1.5*Qavg)	160	120	60	40	120	60	40	340	-	40	360	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 32	Weighted Average Delay (seconds) = 34
Level of Service - LOS = C-	Level of Service - LOS = C-
	Intersection Capacity Utilization - ICU = 0.74
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

49

Existing Traffic with Existing Lane Geometrics

Euclid St at Valencia Dr

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 9 secs	X			X								
Movement 2: 1 secs	X	X	X									
Movement 3: 25 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 57 secs								X	X		X	X
# of Lanes (#, S, P)	P	1	1	P	1	1	P	2	S	P	2	S
Unadjusted Volume	183	152	69	142	233	164	106	1490	88	85	1462	184
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
Min/Ped Time Override (sec)	8	25	25	8	25	25	8	28	28	8	28	28
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	183	152	69	142	233	164	106	1490	88	85	1462	184
Saturation Flow (vph)	P/P	1900	1800	P/P	1900	1800	P/P	3800	Shrd	P/P	3800	Shrd
X or Volume/Capacity	0.78	0.33	0.16	0.56	0.53	0.40	0.32	0.76	-	0.24	0.79	-
Effective Green (sec)	8	24	24	7	23	23	6	55	-	6	55	-
Split Time (sec)	10	26	26	9	25	25	8	57	-	8	57	-
Min. Time or Ped. Time (sec)	8	25	25	8	25	25	8	28	-	8	28	-
Delay - 15 min pk (sec/veh)	49	33	31	31	38	35	17	20	-	8	21	-
Level of Service (LOS)	D	C-	C-	C-	D+	D+	B	B	-	A	C+	-
Average 'Q' (veh/ln)	3	3	1	2	5	4	1	10	-	1	10	-
Design 'Q'-ft/ln (1.5*Qavg)	100	100	40	60	160	120	40	300	-	40	300	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 24	Weighted Average Delay (seconds) = 26
Level of Service - LOS = C+	Level of Service - LOS = C
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

50

Existing Traffic with Existing Lane Geometrics

Valencia Dr at Highland Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T*	R	L	T	R	L	T*	R
Movement 1: 34 secs	X	X	X	X	X	X				X	X	X
Movement 2: 66 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	1	S	1	1	1	1	1	S
Unadjusted Volume	97	146	85	14	173	17	30	249	16	12	311	90
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
Min/Ped Time Override (sec)		22	22		22	22		22	22		22	22
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***						***					
Peak Hour Volume (vph)	97	146	85	14	173	17	30	249	16	12	311	90
Saturation Flow (vph)	1350	1900	1800	1200	1900	Shrd	1200	1900	1800	1350	1900	Shrd
X or Volume/Capacity	0.22	0.24	0.15	0.04	0.31	-	0.04	0.20	0.01	0.01	0.33	-
Effective Green (sec)	32	32	32	32	32	-	64	64	64	64	64	-
Split Time (sec)	34	34	34	34	34	-	66	66	66	66	66	-
Min. Time or Ped. Time (sec)	10	22	22	10	22	-	10	22	22	10	22	-
Delay - 15 min pk (sec/veh)	26	26	25	24	27	-	7	8	7	7	9	-
Level of Service (LOS)	C	C	C+	C+	C	-	A	A	A	A	A	-
Average 'Q' (veh/ln)	2	3	2	1	4	-	1	2	1	1	4	-
Design 'Q'-ft/ln (1.5*Qavg)	60	100	60	40	120	-	40	60	40	40	120	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 16	Weighted Average Delay (seconds) = 15
Level of Service - LOS = B	Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.32	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

50

Existing Traffic with Existing Lane Geometrics

Valencia Dr at Highland Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	L	T	R	L	T	R	L	T*	R
Movement Times												
Movement 1: 40 secs	X	X	X	X	X	X						
Movement 2: 60 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	1	S	1	1	1	1	1	S
Unadjusted Volume	114	257	82	30	228	29	72	342	66	79	368	92
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
Min/Ped Time Override (sec)		22	22		22	22		22	22		22	22
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***						***					
Peak Hour Volume (vph)	114	257	82	30	228	29	72	342	66	79	368	92
Saturation Flow (vph)	1350	1900	1800	1200	1900	Shrd	1200	1900	1800	1250	1900	Shrd
X or Volume/Capacity	0.22	0.36	0.12	0.07	0.36	-	0.10	0.31	0.06	0.11	0.42	-
Effective Green (sec)	38	38	38	38	38	-	58	58	58	58	58	-
Split Time (sec)	40	40	40	40	40	-	60	60	60	60	60	-
Min. Time or Ped. Time (sec)	10	22	22	10	22	-	10	22	22	10	22	-
Delay - 15 min pk (sec/veh)	22	24	20	20	24	-	10	11	9	10	13	-
Level of Service (LOS)	C+	C+	C+	B	C+	-	A	B	A	A	B	-
Average 'Q' (veh/ln)	2	4	1	1	4	-	1	4	1	1	5	-
Design 'Q'-ft/ln (1.5*Qavg)	60	120	40	40	120	-	40	120	40	40	160	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	17	Weighted Average Delay (seconds) =	17
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.39
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

51

Existing Traffic with Existing Lane Geometrics

Magnolia Ave at Orangethorpe Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X					X			
Movement 2: 7 secs				X	X	X			X			
Movement 3: 30 secs		X	X		X	X						
Movement 4: 12 secs			X				X			X		
Movement 5: 3 secs			X				X	X	X			
Movement 6: 36 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	2	3	S	2	2	1	2	2	S
Unadjusted Volume	173	685	370	448	693	119	369	660	206	116	915	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
Min/Ped Time Override (sec)	12	30	30	12	27	27	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	173	685	370	448	693	119	369	660	206	116	915	73
Saturation Flow (vph)	3500	3800	1800	3500	5700	Shrd	3500	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.49	0.64	0.48	0.75	0.41	-	0.81	0.47	0.20	0.33	0.76	-
Effective Green (sec)	10	28	43	17	35	-	13	37	56	10	34	-
Split Time (sec)	12	30	45	19	37	-	15	39	58	12	36	-
Min. Time or Ped. Time (sec)	12	30	30	12	27	-	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	48	35	23	48	25	-	57	25	11	44	34	-
Level of Service (LOS)	D	C+	C+	D	C	-	E+	C	B	D	C-	-
Average 'Q' (veh/ln)	2	7	6	5	5	-	5	6	3	1	9	-
Design 'Q'-ft/ln (1.5*Qavg)	60	220	180	160	160	-	160	180	100	40	280	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	C-	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.73
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

51

Existing Traffic with Existing Lane Geometrics

Magnolia Ave at Orangethorpe Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X					X			
Movement 2: 0 secs				X	X	X			X			
Movement 3: 30 secs		X	X		X	X						
Movement 4: 12 secs			X				X			X		
Movement 5: 3 secs			X				X	X	X			
Movement 6: 43 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	2	3	S	2	2	1	2	2	S
Unadjusted Volume	122	603	364	237	668	91	389	1002	437	120	1281	86
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
Min/Ped Time Override (sec)	12	30	30	12	27	27	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

Peak Hour Volume (vph)	122	603	364	237	668	91	389	1002	437	120	1281	86
Saturation Flow (vph)	3500	3800	1800	3500	5700	Shrd	3500	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.35	0.57	0.47	0.68	0.48	-	0.85	0.60	0.43	0.34	0.88	-
Effective Green (sec)	10	28	43	10	28	-	13	44	56	10	41	-
Split Time (sec)	12	30	45	12	30	-	15	46	58	12	43	-
Min. Time or Ped. Time (sec)	12	30	30	12	27	-	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	45	33	22	54	31	-	61	23	14	45	34	-
Level of Service (LOS)	D	C-	C+	D-	C-	-	E	C+	B	D	C-	-
Average 'Q' (veh/in)	2	6	6	3	5	-	5	8	5	2	11	-
Design 'Q'-ft/in (1.5*Qavg)	60	180	180	100	160	-	160	240	160	60	340	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	33	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	C-	Level of Service - LOS =	D+
Intersection Capacity Utilization - ICU = 0.76			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

52

Existing Traffic with Existing Lane Geometrics

Brookhurst Rd at Orangethorpe Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 12 secs	X			X								
Movement 2: 2 secs				X	X	X						
Movement 3: 31 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 47 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3	S	2	3	S	P	2	1	P	2	S
Unadjusted Volume	100	868	179	226	598	100	129	729	170	78	1018	44
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
Min/Ped Time Override (sec)	12	26	26	12	26	26	8	30	30	8	32	32
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***	***	***	***	***	***	***	***	***	***	***	***
Peak Hour Volume (vph)	100	868	179	226	598	100	129	729	170	78	1018	44
Saturation Flow (vph)	1800	5700	Shrd	3500	5700	Shrd	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.56	0.63	-	0.54	0.40	-	0.53	0.43	0.21	0.22	0.62	-
Effective Green (sec)	10	29	-	12	31	-	6	45	45	6	45	-
Split Time (sec)	12	31	-	14	33	-	8	47	47	8	47	-
Min. Time or Ped. Time (sec)	12	26	-	12	26	-	8	30	30	8	32	-
Delay - 15 min pk (sec/veh)	55	33	-	46	28	-	28	19	17	6	23	-
Level of Service (LOS)	D-	C-	-	D	C	-	C	B	B	A	C+	-
Average 'Q' (veh/ln)	3	7	-	3	4	-	2	6	3	1	8	-
Design 'Q'-ft/ln (1.5*Qavg)	100	220	-	100	120	-	60	180	100	40	240	-
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.61
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

52

Existing Traffic with Existing Lane Geometrics

Brookhurst Rd at Orangethorpe Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 13 secs	X			X								
Movement 2: 3 secs				X	X	X						
Movement 3: 26 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 6 secs							X	X	X			
Movement 6: 44 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	2	3	S	P	2	1	P	2	S
Unadjusted Volume	99	555	134	197	667	100	181	963	164	103	759	75
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
Min/Ped Time Override (sec)	12	26	26	12	26	26	8	30	30	8	32	32
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	99	555	134	197	667	100	181	963	164	103	759	75
Saturation Flow (vph)	1800	5700	Shrd	3500	5700	Shrd	P/P	3800	1800	P/P	3800	Shrd
X or Volume/Capacity	0.50	0.50	-	0.40	0.50	-	0.50	0.53	0.19	0.29	0.52	-
Effective Green (sec)	11	24	-	14	27	-	12	48	48	6	42	-
Split Time (sec)	13	26	-	16	29	-	14	50	50	8	44	-
Min. Time or Ped. Time (sec)	12	26	-	12	26	-	8	30	30	8	32	-
Delay - 15 min pk (sec/veh)	51	34	-	42	32	-	30	19	15	16	23	-
Level of Service (LOS)	D-	C-	-	D	C-	-	C	B	B	B	C+	-
Average 'Q' (veh/ln)	2	5	-	2	5	-	3	7	2	1	7	-
Design 'Q'-ft/ln (1.5*Qavg)	60	160	-	60	160	-	100	220	60	40	220	-
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	28	Weighted Average Delay (seconds) =	29
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.51
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

53

Existing Conditions with Existing Lane Geometrics

Euclid St at Orangethorpe Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 12 secs	X			X					X			X
Movement 2: 0 secs	X	X	X									X
Movement 3: 27 secs		X	X		X	X						
Movement 4: 10 secs							X			X		
Movement 5: 11 secs									X	X	X	X
Movement 6: 40 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	P	2	1	P	2	1
Unadjusted Volume	220	651	145	209	507	127	90	1038	131	136	1496	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
Min/Ped Time Override (sec)	12	27	27	12	27	27	8	30	30	8	30	30
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	1.00	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	220	651	145	209	507	127	90	1038	131	136	1496	96
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	P/P	3800	1800	P/P	3800	1800
X or Volume/Capacity	0.63	0.56	-	0.60	0.44	-	0.19	0.72	0.15	0.19	0.80	0.09
Effective Green (sec)	10	25	-	10	25	-	8	38	50	19	49	61
Split Time (sec)	12	27	-	12	27	-	10	40	52	21	51	63
Min. Time or Ped. Time (sec)	12	27	-	12	27	-	8	30	30	8	30	30
Delay - 15 min pk (sec/veh)	52	34	-	50	33	-	9	30	14	17	25	8
Level of Service (LOS)	D-	C-	-	D-	C-	-	A	C	B	B	C	A
Average 'Q' (veh/in)	3	6	-	3	4	-	1	9	2	1	11	1
Design 'Q'-ft/in (1.5*Qavg)	100	180	-	100	120	-	40	280	60	40	340	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	30	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.66
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

53

Existing Conditions with Existing Lane Geometrics

Euclid St at Orangethorpe Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 12 secs	X			X	X	X			X			X
Movement 2: 0 secs					X				X			
Movement 3: 27 secs		X	X		X	X						
Movement 4: 10 secs							X			X		
Movement 5: 3 secs							X	X	X			
Movement 6: 48 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	P	2	1	P	2	1
Unadjusted Volume	147	568	121	247	714	183	170	1371	235	153	1236	175
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
Min/Ped Time Override (sec)	12	27	27	12	27	27	8	30	30	8	30	30
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	1.00	P/P	1.00	1.00

Output

Peak Hour Volume (vph)	147	568	121	247	714	183	170	1371	235	153	1236	175
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	P/P	3800	1800	P/P	3800	1800
X or Volume/Capacity	0.42	0.48	-	0.71	0.63	-	0.50	0.74	0.21	0.56	0.71	0.17
Effective Green (sec)	10	25	-	10	25	-	11	49	61	8	46	58
Split Time (sec)	12	27	-	12	27	-	13	51	63	10	48	60
Min. Time or Ped. Time (sec)	12	27	-	12	27	-	8	30	30	8	30	30
Delay - 15 min pk (sec/veh)	46	33	-	55	35	-	29	23	9	32	24	10
Level of Service (LOS)	D	C-	-	D-	D+	-	C	C+	A	C-	C+	B
Average 'Q' (veh/ln)	2	5	-	3	6	-	2	10	3	2	9	2
Design 'Q'-ft/ln (1.5*Qavg)	60	160	-	100	180	-	60	300	100	60	280	60
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	29	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.66
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

54

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Highland Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 8 secs	X			X								
Movement 2: 38 secs	X	X	X									
Movement 3: 24 secs		X	X		X	X						
Movement 4: 30 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	3	S	P	3	S	1	1	1	1	1	1
Unadjusted Volume	57	1371	20	19	352	52	30	51	159	169	23	49
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
Min/Ped Time Override (sec)	8	24	24	8	24	24	27	27	27	27	27	27
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	57	1371	20	19	352	52	30	51	159	169	23	49
Saturation Flow (vph)	P/P	5700	Shrd	P/P	5700	Shrd	1250	1900	1800	1000	1900	1800
X or Volume/Capacity	0.02	0.41	-	0.05	0.32	-	0.09	0.10	0.32	0.60	0.04	0.10
Effective Green (sec)	44	60	-	6	22	-	28	28	28	28	28	28
Split Time (sec)	46	62	-	8	24	-	30	30	30	30	30	30
Min. Time or Ped. Time (sec)	8	24	-	8	24	-	27	27	27	27	27	27
Delay - 15 min pk (sec/veh)	2	11	-	5	33	-	27	27	30	40	26	27
Level of Service (LOS)	A	B	-	A	C-	-	C	C	C-	D	C	C
Average 'Q' (veh/ln)	1	5	-	1	3	-	1	1	3	3	1	1
Design 'Q'-ft/ln (1.5*Qavg)	40	160	-	40	100	-	40	40	100	100	40	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 19	Weighted Average Delay (seconds) = 15
Level of Service - LOS = B	Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.44	
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

54

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Highland Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	T	R	*L*	T	R
Movement Times	X			X								
Movement 1: 8 secs	X			X								
Movement 2: 12 secs				X	X	X						
Movement 3: 47 secs		X	X		X	X						
Movement 4: 33 secs							X	X	X	X	X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	3	S	P	3	S	1	1	1	1	1	1
Unadjusted Volume	86	886	61	97	1098	157	113	120	115	133	96	135
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
Min/Ped Time Override (sec)	8	24	24	8	24	24	27	27	27	27	27	27
Permissive Veh/Cycle	2			2								
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	86	886	61	97	1098	157	113	120	115	133	96	135
Saturation Flow (vph)	P/P	5700	Shrd	P/P	5700	Shrd	1050	1900	1800	1100	1900	1800
X or Volume/Capacity	0.24	0.37	-	0.09	0.39	-	0.35	0.20	0.21	0.39	0.16	0.24
Effective Green (sec)	6	45	-	18	57	-	31	31	31	31	31	31
Split Time (sec)	8	47	-	20	59	-	33	33	33	33	33	33
Min. Time or Ped. Time (sec)	8	24	-	8	24	-	27	27	27	27	27	27
Delay - 15 min pk (sec/veh)	9	19	-	9	12	-	30	26	26	30	26	27
Level of Service (LOS)	A	B	-	A	B	-	C	C	C	C	C	C
Average 'Q' (veh/ln)	1	5	-	1	5	-	2	2	2	3	2	3
Design 'Q'-ft/ln (1.5*Qavg)	40	160	-	40	160	-	60	60	60	100	60	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	18	Weighted Average Delay (seconds) =	14
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.38
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

55

Existing Conditions with Existing Lane Geometrics

Harbor Blvd at Orangethorpe Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 31 secs		X	X		X	X						
Movement 3: 12 secs							X			X		
Movement 4: 4 secs										X	X	X
Movement 5: 41 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	1	2	2	1	2	2	1	2	2	1
Unadjusted Volume	155	730	150	107	490	106	97	905	114	143	1123	118
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	155	730	150	107	490	106	97	905	114	143	1123	118
Saturation Flow (vph)	3500	5700	1800	3500	3800	1800	3500	3800	1800	3500	3800	1800
X or Volume/Capacity	0.44	0.44	0.29	0.31	0.44	0.20	0.28	0.61	0.16	0.29	0.69	0.15
Effective Green (sec)	10	29	29	10	29	29	10	39	39	14	43	43
Split Time (sec)	12	31	31	12	31	31	12	41	41	16	45	45
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	30	30	12	30	30
Delay - 15 min pk (sec/veh)	46	30	29	44	30	28	44	26	20	40	25	18
Level of Service (LOS)	D	C	C	D	C-	C	D	C	C+	D	C	B
Average 'Q' (veh/in)	2	5	3	1	5	2	1	8	2	2	9	2
Design 'Q'-ft/ln (1.5*Qavg)	60	160	100	40	160	60	40	240	60	60	280	60
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	29	Weighted Average Delay (seconds) =	30
Level of Service - LOS =	C	Level of Service - LOS =	C
		Intersection Capacity Utilization - ICU =	0.54
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

55

Existing Conditions with Existing Lane Geometrics

Harbor Blvd at Orangethorpe Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 13 secs	X			X								
Movement 2: 35 secs		X	X		X	X						
Movement 3: 13 secs							X			X		
Movement 4: 39 secs								X	X		X	X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	1	2	2	1	2	2	1	2	2	1
Unadjusted Volume	260	656	163	226	749	160	211	1013	188	184	1078	170
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	260	656	163	226	749	160	211	1013	188	184	1078	170
Saturation Flow (vph)	3500	5700	1800	3500	3800	1800	3500	3800	1800	3500	3800	1800
X or Volume/Capacity	0.68	0.35	0.27	0.59	0.60	0.27	0.55	0.72	0.28	0.48	0.77	0.26
Effective Green (sec)	11	33	33	11	33	33	11	37	37	11	37	37
Split Time (sec)	13	35	35	13	35	35	13	39	39	13	39	39
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	30	30	12	30	30
Delay - 15 min pk (sec/veh)	52	26	26	49	30	26	48	30	23	46	32	23
Level of Service (LOS)	D-	C	C	D	C-	C	D	C-	C+	D	C-	C+
Average 'Q' (veh/ln)	3	4	3	3	7	3	3	9	3	2	9	3
Design 'Q'-ft/ln (1.5*Qavg)	100	120	100	100	220	100	100	280	100	60	280	100
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	33	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.67
Predetermined Cycle Length is 100 sec			
Min/Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

56

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Lemon St

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 2 secs	X	X	X									
Movement 3: 33 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 6 secs										X	X	X
Movement 6: 39 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	2	2	S	P	2	1	P	2	1
Unadjusted Volume	110	728	205	147	499	102	126	843	187	197	994	61
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
Min/Ped Time Override (sec)	12	25	25	12	28	28	8	31	31	8	29	29
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	0.76	0.76	P/P	0.76	0.76

Output

	***			***			***			***		
Peak Hour Volume (vph)	110	728	205	147	499	102	126	843	187	197	994	61
Saturation Flow (vph)	1800	5700	Shrd	3500	3800	Shrd	P/P	3800	1800	P/P	3800	1800
X or Volume/Capacity	0.51	0.50	-	0.42	0.51	-	0.50	0.60	0.28	0.58	0.61	0.08
Effective Green (sec)	12	33	-	10	31	-	6	37	37	12	43	43
Split Time (sec)	14	35	-	12	33	-	8	39	39	14	45	45
Min. Time or Ped. Time (sec)	12	25	-	12	28	-	8	31	31	8	29	29
Delay - 15 min pk (sec/veh)	50	28	-	46	30	-	26	21	18	33	18	13
Level of Service (LOS)	D	C	-	D	C	-	C	C+	B	C-	B	B
Average 'Q' (veh/ln)	3	6	-	2	6	-	1	6	2	3	6	1
Design 'Q'-ft/ln (1.5*Qavg)	100	180	-	60	180	-	40	180	60	100	180	40
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	26	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	C	Level of Service - LOS =	C+
Intersection Capacity Utilization - ICU = 0.56			
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

56

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Lemon St

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 13 secs	X			X								
Movement 2: 39 secs		X	X		X	X						
Movement 3: 8 secs							X			X		
Movement 4: 5 secs							X	X	X			
Movement 5: 35 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3	S	2	2	S	P	2	1	P	2	1
Unadjusted Volume	156	701	299	288	928	183	220	1016	128	158	999	66
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
Min/Ped Time Override (sec)	12	25	25	12	28	28	8	31	31	8	29	29
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	0.76	0.76	P/P	0.76	0.76

Output

	***			***			***			***		
Peak Hour Volume (vph)	156	701	299	288	928	183	220	1016	128	158	999	66
Saturation Flow (vph)	1800	5700	Shrd	3500	3800	Shrd	P/P	3800	1800	P/P	3800	1800
X or Volume/Capacity	0.79	0.47	-	0.75	0.79	-	0.74	0.70	0.19	0.80	0.80	0.11
Effective Green (sec)	11	37	-	11	37	-	11	38	38	6	33	33
Split Time (sec)	13	39	-	13	39	-	13	40	40	8	35	35
Min. Time or Ped. Time (sec)	12	25	-	12	28	-	8	31	31	8	29	29
Delay - 15 min pk (sec/veh)	70	25	-	56	33	-	44	23	16	53	28	18
Level of Service (LOS)	E	C+	-	E+	C-	-	D	C+	B	D-	C	B
Average 'Q' (veh/ln)	4	6	-	4	10	-	4	7	2	3	7	1
Design 'Q'-ft/ln (1.5*Qavg)	120	180	-	120	300	-	120	220	60	100	220	40
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	32	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.79
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

57

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Raymond Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	T*	R	L*	T	R	L*	T	R	L	T*	R
Movement 1: 13 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 32 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 4 secs							X	X	X			
Movement 6: 37 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	2	3	S	P	2	S	P	2	1
Unadjusted Volume	95	799	178	185	619	52	187	591	155	96	625	59
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
Min/Ped Time Override (sec)	12	23	23	12	23	23	8	28	28	8	28	28
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	95	799	178	185	619	52	187	591	155	96	625	59
Saturation Flow (vph)	1800	5700	Shrd	3500	5700	Shrd	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.48	0.57	-	0.31	0.33	-	0.63	0.50	-	0.27	0.47	0.09
Effective Green (sec)	11	30	-	17	36	-	10	39	-	6	35	35
Split Time (sec)	13	32	-	19	38	-	12	41	-	8	37	37
Min. Time or Ped. Time (sec)	12	23	-	12	23	-	8	28	-	8	28	28
Delay - 15 min pk (sec/veh)	50	31	-	38	24	-	37	24	-	13	26	22
Level of Service (LOS)	D	C-	-	D+	C+	-	D+	C+	-	B	C	C+
Average 'Q' (veh/ln)	2	6	-	2	4	-	3	6	-	1	6	1
Design 'Q'-ft/ln (1.5*Qavg)	60	180	-	60	120	-	100	180	-	40	180	40
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	29	Weighted Average Delay (seconds) =	31
Level of Service - LOS =	C	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.49
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

57

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Raymond Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 17 secs	X			X								
Movement 2: 10 secs				X	X	X						
Movement 3: 27 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 9 secs							X	X	X			
Movement 6: 29 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	2	3	S	P	2	S	P	2	1
Unadjusted Volume	134	643	190	338	1155	116	245	776	119	81	605	138
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
Min/Ped Time Override (sec)	12	23	23	12	23	23	8	28	28	8	28	28
Permissive Veh/Cycle							2			2		
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	134	643	190	338	1155	116	245	776	119	81	605	138
Saturation Flow (vph)	1800	5700	Shrd	3500	5700	Shrd	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.50	0.58	-	0.39	0.64	-	0.64	0.65	-	0.23	0.59	0.28
Effective Green (sec)	15	25	-	25	35	-	15	36	-	6	27	27
Split Time (sec)	17	27	-	27	37	-	17	38	-	8	29	29
Min. Time or Ped. Time (sec)	12	23	-	12	23	-	8	28	-	8	28	28
Delay - 15 min pk (sec/veh)	45	35	-	32	29	-	36	29	-	6	34	30
Level of Service (LOS)	D	C-	-	C-	C	-	D+	C	-	A	C-	C-
Average 'Q' (veh/ln)	3	6	-	4	8	-	4	8	-	1	6	3
Design 'Q'-ft/ln (1.5*Qavg)	100	180	-	120	240	-	120	240	-	40	180	100
Available Storage (ft)							2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	32	Weighted Average Delay (seconds) =	33
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.60
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

58

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Acacia Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	*L*	T	R
Movement 1: 72 secs	X	X	X	X	X	X						
Movement 2: 28 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	3	S	1	3	S	1	2	S	1	1	1
Unadjusted Volume	84	761	59	87	829	128	57	95	83	83	94	107
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
Min/Ped Time Override (sec)	23	23	23	23	23	23	28	28	28	28	28	28
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00

Output

	***						***					
Peak Hour Volume (vph)	84	761	59	87	829	128	57	95	83	83	94	107
Saturation Flow (vph)	450	5700	Shrd	550	5700	Shrd	1150	3800	Shrd	1200	1900	1800
X or Volume/Capacity	0.27	0.21	-	0.23	0.24	-	0.19	0.18	-	0.27	0.19	0.23
Effective Green (sec)	70	70	-	70	70	-	26	26	-	26	26	26
Split Time (sec)	72	72	-	72	72	-	28	28	-	28	28	28
Min. Time or Ped. Time (sec)	23	23	-	23	23	-	28	28	-	28	28	28
Delay - 15 min pk (sec/veh)	8	5	-	7	6	-	30	29	-	31	30	30
Level of Service (LOS)	A	A	-	A	A	-	C-	C	-	C-	C	C-
Average 'Q' (veh/in)	1	2	-	1	3	-	1	2	-	2	2	2
Design 'Q'-ft/in (1.5*Qavg)	40	60	-	40	100	-	40	60	-	60	60	60
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	11	Weighted Average Delay (seconds) =	20
Level of Service - LOS =	B	Level of Service - LOS =	B
		Intersection Capacity Utilization - ICU =	0.27
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

58

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Acacia Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	*L*	T	R	L	T	R	*L*	T	R
Movement Times												
Movement 1: 69 secs	X	X	X	X	X	X						
Movement 2: 31 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	3	S	1	3	S	1	2	S	1	1	1
Unadjusted Volume	56	933	108	100	1135	97	103	86	99	146	142	128
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
Min/Ped Time Override (sec)	23	23	23	23	23	23	28	28	28	28	28	28
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00

Output

	***						***					
Peak Hour Volume (vph)	56	933	108	100	1135	97	103	86	99	146	142	128
Saturation Flow (vph)	300	5700	Shrd	350	5700	Shrd	1100	3800	Shrd	1150	1900	1800
X or Volume/Capacity	0.28	0.27	-	0.43	0.32	-	0.32	0.17	-	0.44	0.26	0.25
Effective Green (sec)	67	67	-	67	67	-	29	29	-	29	29	29
Split Time (sec)	69	69	-	69	69	-	31	31	-	31	31	31
Min. Time or Ped. Time (sec)	23	23	-	23	23	-	28	28	-	28	28	28
Delay - 15 min pk (sec/veh)	10	7	-	13	7	-	30	27	-	33	28	28
Level of Service (LOS)	B	A	-	B	A	-	C-	C	-	C-	C	C
Average 'Q' (veh/ln)	1	3	-	1	4	-	2	2	-	3	3	3
Design 'Q'-ft/ln (1.5*Qavg)	40	100	-	40	120	-	60	60	-	100	100	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	13	Weighted Average Delay (seconds) =	25
Level of Service - LOS =	B	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.43
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

59

Existing Traffic with Existing Lane Geometrics

State College Blvd at Orangethorpe Ave

Fullerton

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 11 secs	X			X								
Movement 2: 30 secs		X	X		X	X						
Movement 3: 8 secs							X			X		
Movement 4: 19 secs							X	X	X			
Movement 5: 32 secs							X	X			X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	3	S	P	3	S	P	2	1	P	3	S
Unadjusted Volume	214	1046	248	214	1269	99	309	1709	100	157	1390	145
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
Min/Ped Time Override (sec)	8	28	28	8	28	28	8	29	29	8	29	29
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	214	1046	248	214	1269	99	309	1709	100	157	1390	145
Saturation Flow (vph)	P/P	5700	Shrd	P/P	5700	Shrd	P/P	3800	1800	P/P	5700	Shrd
X or Volume/Capacity	0.88	0.81	-	0.88	0.86	-	0.53	0.92	0.11	0.79	0.90	-
Effective Green (sec)	9	28	-	9	28	-	25	49	49	6	30	-
Split Time (sec)	11	30	-	11	30	-	27	51	51	8	32	-
Min. Time or Ped. Time (sec)	8	28	-	8	28	-	8	29	29	8	29	-
Delay - 15 min pk (sec/veh)	63	38	-	63	40	-	28	32	14	52	41	-
Level of Service (LOS)	E	D+	-	E	D	-	C	C-	B	D-	D	-
Average 'Q' (veh/ln)	4	9	-	4	9	-	5	13	1	3	10	-
Design 'Q'-ft/ln (1.5*Qavg)	120	280	-	120	280	-	160	400	40	100	300	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	39	Weighted Average Delay (seconds) =	39
Level of Service - LOS =	D+	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.89
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

59

Existing Traffic with Existing Lane Geometrics

State College Blvd at Orangethorpe Ave

Fullerton

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 34 secs		X	X		X	X						
Movement 4: 8 secs							X			X		
Movement 5: 7 secs							X	X	X			
Movement 6: 33 secs								X	X		X	X
# of Lanes (#, S, P)	P	3	S	P	3	S	P	2	1	P	3	S
Unadjusted Volume	159	916	246	267	1053	155	224	875	92	97	816	142
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
Min/Ped Time Override (sec)	12	28	28	8	28	28	8	29	29	8	29	29
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	-	P/P	1.00	-	P/P	1.00	1.00	P/P	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	159	916	246	267	1053	155	224	875	92	97	816	142
Saturation Flow (vph)	P/P	5700	Shrd	P/P	5700	Shrd	P/P	3800	1800	P/P	5700	Shrd
X or Volume/Capacity	0.48	0.64	-	0.68	0.56	-	0.65	0.61	0.13	0.27	0.54	-
Effective Green (sec)	10	32	-	16	38	-	13	38	38	6	31	-
Split Time (sec)	12	34	-	18	40	-	15	40	40	8	33	-
Min. Time or Ped. Time (sec)	12	28	-	8	28	-	8	29	29	8	29	-
Delay - 15 min pk (sec/veh)	28	31	-	38	25	-	37	27	21	13	30	-
Level of Service (LOS)	C	C-	-	D+	C	-	D+	C	C+	B	C	-
Average 'Q' (veh/ln)	2	7	-	5	7	-	4	8	2	1	6	-
Design 'Q'-ft/ln (1.5*Qavg)	60	220	-	160	220	-	120	240	60	40	180	-
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	29	Weighted Average Delay (seconds) =	32
Level of Service - LOS =	C	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.61
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

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

60

Orangethorpe Ave at Placentia Ave

Placentia

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 15 secs	X			X								
Movement 2: 8 secs				X	X	X						
Movement 3: 31 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 5 secs										X	X	X
Movement 6: 29 secs								X	X		X	X
# of Lanes (#, S, P)	1	3	S	1	3	1	1	2	1	2	2	S
Unadjusted Volume	142	953	25	243	1273	207	59	285	178	328	477	298
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
Min/Ped Time Override (sec)	12	31	31	12	26	26	12	29	29	12	31	31
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	142	953	25	243	1273	207	59	285	178	328	477	298
Saturation Flow (vph)	1800	5700	Shrd	1800	5700	1800	1800	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.61	0.59	-	0.64	0.60	0.31	0.33	0.28	0.37	0.62	0.64	-
Effective Green (sec)	13	29	-	21	37	37	10	27	27	15	32	-
Split Time (sec)	15	31	-	23	39	39	12	29	29	17	34	-
Min. Time or Ped. Time (sec)	12	31	-	12	26	26	12	29	29	12	31	-
Delay - 15 min pk (sec/veh)	52	32	-	44	27	24	47	29	32	45	32	-
Level of Service (LOS)	D-	C-	-	D	C	C+	D	C	C-	D	C-	-
Average 'Q' (veh/ln)	4	6	-	5	7	4	1	3	4	4	7	-
Design 'Q'-ft/ln (1.5*Qavg)	120	180	-	160	220	120	40	100	120	120	220	-
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	33	Weighted Average Delay (seconds) =	34
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.59
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

60

Existing Traffic with Existing Lane Geometrics

Orangethorpe Ave at Placentia Ave

Placentia

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L*	T	R	L	T*	R	L*	T	R	L	T*	R
Movement 1: 23 secs	X			X								
Movement 2: 32 secs		X	X		X	X						
Movement 3: 12 secs							X			X		
Movement 4: 4 secs										X	X	X
Movement 5: 29 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3	S	1	3	1	1	2	1	2	2	S
Unadjusted Volume	275	831	53	204	1093	240	93	354	182	286	379	225
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
Min/Ped Time Override (sec)	12	31	31	12	26	26	12	29	29	12	31	31
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	275	831	53	204	1093	240	93	354	182	286	379	225
Saturation Flow (vph)	1800	5700	Shrd	1800	5700	1800	1800	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.73	0.52	-	0.54	0.64	0.44	0.52	0.35	0.37	0.58	0.51	-
Effective Green (sec)	21	30	-	21	30	30	10	27	27	14	31	-
Split Time (sec)	23	32	-	23	32	32	12	29	29	16	33	-
Min. Time or Ped. Time (sec)	12	31	-	12	26	26	12	29	29	12	31	-
Delay - 15 min pk (sec/veh)	48	30	-	41	32	31	53	30	32	45	30	-
Level of Service (LOS)	D	C-	-	D	C-	C-	D-	C-	C-	D	C	-
Average 'Q' (veh/ln)	6	6	-	4	7	5	2	4	4	3	6	-
Design 'Q'-ft/ln (1.5*Qavg)	180	180	-	120	220	160	60	120	120	100	180	-
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	34	Weighted Average Delay (seconds) =	35
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.60
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

61

Existing Traffic with Existing Lane Geometrics

Euclid St at Imperial Hwy

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 3 secs				X	X	X						
Movement 3: 52 secs		X	X		X	X						
Movement 4: 15 secs							X			X		
Movement 5: 10 secs										X	X	X
Movement 6: 28 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	2	2	1	2	2	S
Unadjusted Volume	65	1628	221	236	1775	70	198	373	200	206	812	52
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
Min/Ped Time Override (sec)	12	28	28	12	28	28	12	28	28	12	28	28
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	65	1628	221	236	1775	70	198	373	200	206	812	52
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	3500	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.22	0.78	-	0.62	0.73	-	0.52	0.45	0.51	0.31	0.76	-
Effective Green (sec)	10	50	-	13	53	-	13	26	26	23	36	-
Split Time (sec)	12	52	-	15	55	-	15	28	28	25	38	-
Min. Time or Ped. Time (sec)	12	28	-	12	28	-	12	28	28	12	28	-
Delay - 15 min pk (sec/veh)	53	33	-	59	30	-	56	43	46	43	43	-
Level of Service (LOS)	D-	C-	-	E+	C	-	E+	D	D	D	D	-
Average 'Q' (veh/ln)	1	12	-	4	11	-	3	5	5	3	10	-
Design 'Q'-ft/ln (1.5*Qavg)	40	360	-	120	340	-	100	160	160	100	300	-
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	37	Weighted Average Delay (seconds) =	39
Level of Service - LOS =	D+	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.72
Predetermined Cycle Length is 120 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

61

Existing Traffic with Existing Lane Geometrics

Euclid St at Imperial Hwy

Caltrans

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L*	T	R	L	T*	R	L	T*	R	L*	T	R
Movement 1: 12 secs	X			X								
Movement 2: 6 secs				X	X	X						
Movement 3: 56 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 6 secs							X	X	X			
Movement 6: 28 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	2	2	1	2	2	S
Unadjusted Volume	148	1512	174	267	1821	125	295	676	203	150	400	91
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
Min/Ped Time Override (sec)	12	28	28	12	28	28	12	28	28	12	28	28
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

Peak Hour Volume (vph)	148	1512	174	267	1821	125	295	676	203	150	400	91
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	3500	3800	1800	3500	3800	Shrd
X or Volume/Capacity	0.51	0.66	-	0.57	0.68	-	0.63	0.67	0.42	0.51	0.60	-
Effective Green (sec)	10	54	-	16	60	-	16	32	32	10	26	-
Split Time (sec)	12	56	-	18	62	-	18	34	34	12	28	-
Min. Time or Ped. Time (sec)	12	28	-	12	28	-	12	28	28	12	28	-
Delay - 15 min pk (sec/veh)	59	27	-	54	24	-	56	43	39	59	45	-
Level of Service (LOS)	E+	C	-	D-	C+	-	E+	D	D+	E+	D	-
Average 'Q' (veh/ln)	2	10	-	4	11	-	4	8	5	2	6	-
Design 'Q'-ft/ln (1.5*Qavg)	60	300	-	120	340	-	120	240	160	60	180	-
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	35	Weighted Average Delay (seconds) =	32
Level of Service - LOS =	C-	Level of Service - LOS =	C-
		Intersection Capacity Utilization - ICU =	0.65
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

62

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at Brea Blvd

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 13 secs	X			X								
Movement 2: 2 secs				X	X	X						
Movement 3: 47 secs		X	X		X	X						
Movement 4: 13 secs							X			X		
Movement 5: 10 secs										X	X	X
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	1	2	3	1	2	3	1	2	2	1
Unadjusted Volume	158	1214	567	213	2037	86	207	894	267	548	827	260
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
Min/Ped Time Override (sec)	12	35	35	12	35	35	13	35	35	12	35	35
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	158	1214	567	213	2037	86	207	894	267	548	827	260
Saturation Flow (vph)	3500	5700	1800	3500	5700	1800	3500	5700	1800	3500	3800	1800
X or Volume/Capacity	0.49	0.57	0.84	0.56	0.91	0.12	0.65	0.57	0.54	0.89	0.61	0.40
Effective Green (sec)	11	45	45	13	47	47	11	33	33	21	43	43
Split Time (sec)	13	47	47	15	49	49	13	35	35	23	45	45
Min. Time or Ped. Time (sec)	12	35	35	12	35	35	13	35	35	12	35	35
Delay - 15 min pk (sec/veh)	57	31	46	57	42	24	62	39	41	66	34	31
Level of Service (LOS)	E+	C-	D	E+	D	C+	E	D+	D	E	C-	C-
Average 'Q' (veh/ln)	2	8	12	3	14	2	3	7	6	8	9	6
Design 'Q'-ft/ln (1.5*Qavg)	60	240	360	100	420	60	100	220	180	240	280	180
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	42	Weighted Average Delay (seconds) =	46
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.77
Predetermined Cycle Length is 120 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

62

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at Brea Blvd

Caltrans

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 17 secs	X			X								
Movement 2: 47 secs		X	X		X	X						
Movement 3: 13 secs							X			X		
Movement 4: 8 secs										X	X	X
Movement 5: 35 secs							X	X		X	X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	1	2	3	1	2	3	1	2	2	1
Unadjusted Volume	370	1642	420	311	1861	108	221	892	96	495	882	123
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
Min/Ped Time Override (sec)	12	35	35	12	35	35	12	35	35	12	35	35
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	370	1642	420	311	1861	108	221	892	96	495	882	123
Saturation Flow (vph)	3500	5700	1800	3500	5700	1800	3500	5700	1800	3500	3800	1800
X or Volume/Capacity	0.85	0.77	0.62	0.71	0.87	0.16	0.69	0.57	0.19	0.89	0.68	0.20
Effective Green (sec)	15	45	45	15	45	45	11	33	33	19	41	41
Split Time (sec)	17	47	47	17	47	47	13	35	35	21	43	43
Min. Time or Ped. Time (sec)	12	35	35	12	35	35	12	35	35	12	35	35
Delay - 15 min pk (sec/veh)	69	36	35	60	40	25	64	39	34	69	37	29
Level of Service (LOS)	E	D+	C-	E+	D	C	E	D+	C-	E	D+	C
Average 'Q' (veh/ln)	6	11	9	5	13	2	3	7	2	7	10	3
Design 'Q'-ft/ln (1.5*Qavg)	180	340	280	160	400	60	100	220	60	220	300	100
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	43	Weighted Average Delay (seconds) =	47
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.78
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

63

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at Kraemer Blvd

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 12 secs	X			X								
Movement 2: 7 secs	X	X	X									
Movement 3: 47 secs		X	X		X	X						
Movement 4: 19 secs							X			X		
Movement 5: 35 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	S	2	3	S	2	2	1	2	2	1
Unadjusted Volume	356	1820	228	84	1494	114	368	516	164	318	732	114
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	29	29	12	29	29
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	356	1820	228	84	1494	114	368	516	164	318	732	114
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	3500	3800	1800	3500	3800	1800
X or Volume/Capacity	0.72	0.83	-	0.29	0.75	-	0.74	0.49	0.33	0.64	0.70	0.23
Effective Green (sec)	17	52	-	10	45	-	17	33	33	17	33	33
Split Time (sec)	19	54	-	12	47	-	19	35	35	19	35	35
Min. Time or Ped. Time (sec)	12	31	-	12	31	-	12	29	29	12	29	29
Delay - 15 min pk (sec/veh)	58	33	-	54	35	-	59	38	36	55	43	35
Level of Service (LOS)	E+	C-	-	D-	D+	-	E+	D+	D+	D-	D	C-
Average 'Q' (veh/in)	5	13	-	1	11	-	5	6	4	5	9	3
Design 'Q'-ft/in (1.5*Qavg)	160	400	-	40	340	-	160	180	120	160	280	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	43
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.73
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

63

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at Kraemer Blvd

Caltrans

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 13 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 54 secs		X	X		X	X						
Movement 4: 17 secs							X			X		
Movement 5: 5 secs							X	X	X			
Movement 6: 31 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	2	3	S	2	2	1	2	2	1
Unadjusted Volume	171	1646	235	227	1803	201	478	668	94	347	706	210
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	29	29	12	29	29
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	171	1646	235	227	1803	201	478	668	94	347	706	210
Saturation Flow (vph)	3500	5700	Shrd	3500	5700	Shrd	3500	3800	1800	3500	3800	1800
X or Volume/Capacity	0.53	0.76	-	0.71	0.81	-	0.82	0.62	0.18	0.79	0.77	0.48
Effective Green (sec)	11	52	-	11	52	-	20	34	34	15	29	29
Split Time (sec)	13	54	-	13	54	-	22	36	36	17	31	31
Min. Time or Ped. Time (sec)	12	31	-	12	31	-	12	29	29	12	29	29
Delay - 15 min pk (sec/veh)	58	31	-	65	33	-	60	40	33	65	49	43
Level of Service (LOS)	E+	C-	-	E	C-	-	E	D	C-	E	D	D
Average 'Q' (veh/ln)	3	12	-	4	13	-	7	8	2	5	9	5
Design 'Q'-ft/ln (1.5*Qavg)	100	360	-	120	400	-	220	240	60	160	280	160
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	41	Weighted Average Delay (seconds) =	42
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.77
Predetermined Cycle Length is 120 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

64

Existing Traffic with Existing Lane Geometrics

Beach Blvd at Rosecrans Ave

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 18 secs	X			X								
Movement 2: 38 secs		X	X		X	X						
Movement 3: 14 secs							X			X		
Movement 4: 18 secs									X	X	X	X
Movement 5: 32 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	1	1	3	1
Unadjusted Volume	190	563	267	152	730	114	137	1110	117	139	1779	282
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
Min/Ped Time Override (sec)	12	30	30	12	30	30	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	190	563	267	152	730	114	137	1110	117	139	1779	282
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	1800	1800	5700	1800
X or Volume/Capacity	0.79	0.49	0.49	0.63	0.64	0.21	0.76	0.78	0.26	0.31	0.78	0.39
Effective Green (sec)	16	36	36	16	36	36	12	30	30	30	48	48
Split Time (sec)	18	38	38	18	38	38	14	32	32	32	50	50
Min. Time or Ped. Time (sec)	12	30	30	12	30	30	12	30	30	12	30	30
Delay - 15 min pk (sec/veh)	73	36	38	61	39	32	78	46	37	38	34	27
Level of Service (LOS)	E	D+	D+	E	D+	C-	E	D	D+	D+	C-	C
Average 'Q' (veh/ln)	6	7	6	4	9	3	4	9	3	3	12	6
Design 'Q'-ft/ln (1.5*Qavg)	180	220	180	120	280	100	120	280	100	100	360	180
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	41	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.73
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

64

Existing Traffic with Existing Lane Geometrics

Beach Blvd at Rosecrans Ave

Caltrans

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 17 secs	X			X								
Movement 2: 11 secs	X	X	X									
Movement 3: 30 secs		X	X		X	X						
Movement 4: 14 secs							X			X		
Movement 5: 48 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	1	1	3	1
Unadjusted Volume	331	719	157	172	596	251	143	1826	175	153	1105	258
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
Min/Ped Time Override (sec)	12	30	30	12	30	30	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	331	719	157	172	596	251	143	1826	175	153	1105	258
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	1800	1800	5700	1800
X or Volume/Capacity	0.85	0.58	0.27	0.76	0.67	0.60	0.79	0.84	0.25	0.85	0.51	0.37
Effective Green (sec)	26	39	39	15	28	28	12	46	46	12	46	46
Split Time (sec)	28	41	41	17	30	30	14	48	48	14	48	48
Min. Time or Ped. Time (sec)	12	30	30	12	30	30	12	30	30	12	30	30
Delay - 15 min pk (sec/veh)	65	36	31	72	46	47	82	38	26	90	29	28
Level of Service (LOS)	E	D+	C-	E	D	D	F	D+	C	F	C	C
Average 'Q' (veh/ln)	9	8	4	5	8	6	5	13	4	5	8	5
Design 'Q'-ft/ln (1.5*Qavg)	280	240	120	160	240	180	160	400	120	160	240	160
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	42	Weighted Average Delay (seconds) =	46
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.80
Predetermined Cycle Length is 120 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

65

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Kraemer Blvd

Placentia

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement Times												
Movement 1: 12 secs	X			X								
Movement 2: 9 secs				X	X	X						
Movement 3: 29 secs		X	X		X	X						
Movement 4: 18 secs							X			X		
Movement 5: 32 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	S	1	3	S	2	2	1	1	3	1
Unadjusted Volume	197	927	204	249	1303	160	374	627	235	215	829	129
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
Min/Ped Time Override (sec)	12	24	24	12	24	24	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	197	927	204	249	1303	160	374	627	235	215	829	129
Saturation Flow (vph)	3500	5700	Shrd	1800	5700	Shrd	3500	3800	1800	1800	5700	1800
X or Volume/Capacity	0.56	0.73	-	0.73	0.71	-	0.67	0.55	0.44	0.75	0.48	0.24
Effective Green (sec)	10	27	-	19	36	-	16	30	30	16	30	30
Split Time (sec)	12	29	-	21	38	-	18	32	32	18	32	32
Min. Time or Ped. Time (sec)	12	24	-	12	24	-	12	30	30	12	30	30
Delay - 15 min pk (sec/veh)	49	36	-	51	30	-	46	31	31	56	30	27
Level of Service (LOS)	D	D+	-	D-	C	-	D	C-	C-	E+	C	C
Average 'Q' (veh/ln)	2	8	-	6	9	-	4	6	5	5	5	3
Design 'Q'-ft/ln (1.5*Qavg)	60	240	-	180	280	-	120	180	160	160	160	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 36	Weighted Average Delay (seconds) = 39
Level of Service - LOS = D+	Level of Service - LOS = D+
	Intersection Capacity Utilization - ICU = 0.68
Predetermined Cycle Length is 100 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

65

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at Kraemer Blvd

Placentia

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T*	R	*L*	T	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 14 secs	X			X								
Movement 2: 0 secs				X	X	X						
Movement 3: 33 secs		X	X		X	X						
Movement 4: 14 secs							X			X		
Movement 5: 5 secs										X	X	X
Movement 6: 34 secs								X	X		X	X
# of Lanes (#, S, P)	2	3	S	1	3	S	2	2	1	1	3	1
Unadjusted Volume	264	1416	175	193	1153	134	321	1073	234	267	822	192
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
Min/Ped Time Override (sec)	14	24	24	12	24	24	14	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

Output

Peak Hour Volume (vph)	264	1416	175	193	1153	134	321	1073	234	267	822	192
Saturation Flow (vph)	3500	5700	Shrd	1800	5700	Shrd	3500	3800	1800	1800	5700	1800
X or Volume/Capacity	0.63	0.90	-	0.89	0.73	-	0.76	0.88	0.41	0.87	0.39	0.29
Effective Green (sec)	12	31	-	12	31	-	12	32	32	17	37	37
Split Time (sec)	14	33	-	14	33	-	14	34	34	19	39	39
Min. Time or Ped. Time (sec)	14	24	-	12	24	-	14	30	30	12	30	30
Delay - 15 min pk (sec/veh)	49	41	-	82	33	-	55	42	29	68	24	23
Level of Service (LOS)	D	D	-	F	C-	-	E+	D	C	E	C+	C+
Average 'Q' (veh/ln)	3	10	-	5	8	-	4	10	4	7	5	3
Design 'Q'-ft/ln (1.5*Qavg)	100	300	-	160	240	-	120	300	120	220	160	100
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	46
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.89
Predetermined Cycle Length is 100 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

66

Existing Traffic with Existing Lane Geometrics

Brookhurst St at La Palma Ave

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 17 secs	X			X								X
Movement 2: 4 secs	X	X	X									X
Movement 3: 41 secs		X	X		X	X						
Movement 4: 14 secs			X				X			X		
Movement 5: 44 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	1	2	3	1	2	3	1	2	3	1
Unadjusted Volume	386	798	80	222	809	54	220	1359	185	129	1393	169
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
Min/Ped Time Override (sec)	12	33	33	12	35	35	12	35	35	12	35	35
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	386	798	80	222	809	54	220	1359	185	129	1393	169
Saturation Flow (vph)	3500	5700	1800	3500	5700	1800	3500	5700	1800	3500	5700	1800
X or Volume/Capacity	0.70	0.39	0.09	0.51	0.44	0.09	0.63	0.68	0.29	0.37	0.70	0.18
Effective Green (sec)	19	43	57	15	39	39	12	42	42	12	42	63
Split Time (sec)	21	45	59	17	41	41	14	44	44	14	44	65
Min. Time or Ped. Time (sec)	12	33	33	12	35	35	12	35	35	12	35	35
Delay - 15 min pk (sec/veh)	55	29	18	53	33	28	60	35	29	53	36	15
Level of Service (LOS)	D-	C	B	D-	C-	C	E	D+	C	D-	D+	B
Average 'Q' (veh/ln)	5	6	1	3	6	1	3	10	4	2	10	3
Design 'Q'-ft/ln (1.5*Qavg)	160	180	40	100	180	40	100	300	120	60	300	100
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	37	Weighted Average Delay (seconds) =	40
Level of Service - LOS =	D+	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.60
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

66

Existing Traffic with Existing Lane Geometrics

Brookhurst St at La Palma Ave

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 21 secs	X			X								X
Movement 2: 39 secs		X	X		X	X						
Movement 3: 14 secs			X				X			X		
Movement 4: 6 secs			X				X	X	X			
Movement 5: 40 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	2	3	1	2	3	1	2	3	1	2	3	1
Unadjusted Volume	422	1042	112	403	1188	133	322	1594	304	138	1223	123
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
Min/Ped Time Override (sec)	12	33	33	12	35	35	12	35	35	12	35	35
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	422	1042	112	403	1188	133	322	1594	304	138	1223	123
Saturation Flow (vph)	3500	5700	1800	3500	5700	1800	3500	5700	1800	3500	5700	1800
X or Volume/Capacity	0.76	0.59	0.13	0.73	0.68	0.24	0.61	0.76	0.46	0.39	0.68	0.14
Effective Green (sec)	19	37	57	19	37	37	18	44	44	12	38	59
Split Time (sec)	21	39	59	21	39	39	20	46	46	14	40	61
Min. Time or Ped. Time (sec)	12	33	33	12	35	35	12	35	35	12	35	35
Delay - 15 min pk (sec/veh)	58	37	18	56	38	32	53	36	31	54	38	17
Level of Service (LOS)	E+	D+	B	E+	D+	C-	D-	D+	C-	D-	D+	B
Average 'Q' (veh/in)	6	8	2	6	9	3	5	11	6	2	9	2
Design 'Q'-ft/in (1.5*Qavg)	180	240	60	180	280	100	160	340	180	60	280	60
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	41
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.69
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

67

Existing Traffic with Existing Lane Geometrics

Euclid St at La Palma Ave

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 18 secs	X			X								
Movement 2: 7 secs	X	X	X									
Movement 3: 31 secs		X	X		X	X						
Movement 4: 14 secs							X			X		
Movement 5: 2 secs							X	X	X			
Movement 6: 48 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	S	1	3	S
Unadjusted Volume	251	899	170	184	615	200	173	1378	157	143	1553	191
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	33	33	12	33	33
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	251	899	170	184	615	200	173	1378	157	143	1553	191
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	0.73	0.79	0.31	0.77	0.67	0.46	0.82	0.67	-	0.79	0.80	-
Effective Green (sec)	23	36	36	16	29	29	14	48	-	12	46	-
Split Time (sec)	25	38	38	18	31	31	16	50	-	14	48	-
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	33	-	12	33	-
Delay - 15 min pk (sec/veh)	58	44	34	71	45	42	81	31	-	82	36	-
Level of Service (LOS)	E+	D	C-	E	D	D	F	C-	-	F	D+	-
Average 'Q' (veh/ln)	7	11	4	6	8	5	5	10	-	5	12	-
Design 'Q'-ft/ln (1.5*Qavg)	220	340	120	180	240	160	160	300	-	160	360	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	42	Weighted Average Delay (seconds) =	44
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.79
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

67

Existing Traffic with Existing Lane Geometrics

Euclid St at La Palma Ave

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 20 secs	X			X								
Movement 2: 4 secs				X	X	X						
Movement 3: 31 secs		X	X		X	X						
Movement 4: 18 secs							X			X		
Movement 5: 4 secs							X	X	X			
Movement 6: 43 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	S	1	3	S
Unadjusted Volume	212	679	126	275	832	294	256	1449	151	201	1360	215
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	33	33	12	33	33
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	212	679	126	275	832	294	256	1449	151	201	1360	215
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	0.79	0.74	0.29	0.83	0.80	0.59	0.85	0.75	-	0.84	0.81	-
Effective Green (sec)	18	29	29	22	33	33	20	45	-	16	41	-
Split Time (sec)	20	31	31	24	35	35	22	47	-	18	43	-
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	33	-	12	33	-
Delay - 15 min pk (sec/veh)	69	47	39	68	47	43	74	35	-	79	40	-
Level of Service (LOS)	E	D	D+	E	D	D	E	D+	-	E-	D+	-
Average 'Q' (veh/ln)	6	9	3	8	10	7	8	11	-	6	12	-
Design 'Q'-ft/ln (1.5*Qavg)	180	280	100	240	300	220	240	340	-	180	360	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	46	Weighted Average Delay (seconds) =	47
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.81
Predetermined Cycle Length is 120 sec			
Min/Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

68

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at La Palma Ave

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 15 secs	X			X								
Movement 2: 5 secs	X	X	X									
Movement 3: 43 secs		X	X		X	X						
Movement 4: 10 secs							X			X		
Movement 5: 47 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	1	P	2	1	P	2	S	P	2	1
Unadjusted Volume	208	707	153	154	603	55	116	622	65	110	796	173
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
Min/Ped Time Override (sec)	8	28	28	8	41	41	8	38	38	8	38	38
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	208	707	153	154	603	55	116	622	65	110	796	173
Saturation Flow (vph)	P/P	3800	1800	P/P	3800	1800	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.54	0.49	0.22	0.48	0.46	0.09	0.46	0.48	-	0.42	0.56	0.26
Effective Green (sec)	18	46	46	13	41	41	8	45	-	8	45	45
Split Time (sec)	20	48	48	15	43	43	10	47	-	10	47	47
Min. Time or Ped. Time (sec)	8	28	28	8	41	41	8	38	-	8	38	38
Delay - 15 min pk (sec/veh)	39	29	26	36	32	27	32	30	-	29	31	27
Level of Service (LOS)	D+	C	C	D+	C-	C	C-	C	-	C	C-	C
Average 'Q' (veh/ln)	4	7	3	3	7	1	2	7	-	2	8	4
Design 'Q'-ft/ln (1.5*Qavg)	120	220	100	100	220	40	60	220	-	60	240	120
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	31	Weighted Average Delay (seconds) =	33
Level of Service - LOS =	C-	Level of Service - LOS =	C-
Intersection Capacity Utilization - ICU = 0.51			
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

68

Existing Traffic with Existing Lane Geometrics

Harbor Blvd at La Palma Ave

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement Times												
Movement 1: 14 secs	X			X								
Movement 2: 13 secs				X	X	X						
Movement 3: 28 secs		X	X		X	X						
Movement 4: 14 secs							X			X		
Movement 5: 51 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2	1	P	2	1	P	2	S	P	2	1
Unadjusted Volume	208	602	194	236	994	118	159	1214	74	190	763	307
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
Min/Ped Time Override (sec)	8	28	28	8	41	41	8	38	38	8	38	38
Permissive Veh/Cycle	2			2			2			2		
Progression Adj. Factor (PAF)	P/P	1.00	1.00	P/P	1.00	1.00	P/P	1.00	-	P/P	1.00	1.00

Output

	***			***			***			***		
Peak Hour Volume (vph)	208	602	194	236	994	118	159	1214	74	190	763	307
Saturation Flow (vph)	P/P	3800	1800	P/P	3800	1800	P/P	3800	Shrd	P/P	3800	1800
X or Volume/Capacity	0.82	0.73	0.50	0.47	0.80	0.20	0.55	0.83	-	0.72	0.49	0.42
Effective Green (sec)	12	26	26	25	39	39	12	49	-	12	49	49
Split Time (sec)	14	28	28	27	41	41	14	51	-	14	51	51
Min. Time or Ped. Time (sec)	8	28	28	8	41	41	8	38	-	8	38	38
Delay - 15 min pk (sec/veh)	62	49	46	34	43	30	39	37	-	51	27	27
Level of Service (LOS)	E	D	D	C-	D	C-	D+	D+	-	D-	C	C
Average 'Q' (veh/ln)	5	8	5	5	11	3	3	13	-	4	8	6
Design 'Q'-ft/ln (1.5*Qavg)	160	240	160	160	340	100	100	400	-	120	240	180
Available Storage (ft)	2			2			2			2		
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	43
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.81
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

69

Existing Traffic with Existing Lane Geometrics

Lemon Street
La Palma Ave at Anaheim Blvd (West)

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	L	*T*	R	*L*	T	R
Movement 1: 22 secs	X	X			X	X						
Movement 2: 30 secs		X			X	X						
Movement 3: 38 secs					X	X	X	X				
Movement 4: 30 secs					X					X		X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2		2	1	S	1	S	2		1	
Unadjusted Volume	272	516		637	219	27	375	14	606		186	
Peak Hour Factor (PHF)	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Min/Ped Time Override (sec)	8	20		20	20	32	32	32	12		12	
Permissive Veh/Cycle	2											
Progression Adj. Factor (PAF)	P/P	1.00		1.00	1.00	-	1.00	-	1.00		1.00	

Output

	***			***			***			***		
Peak Hour Volume (vph)	272	516		637	219	27	375	14	606		186	
Saturation Flow (vph)	P/P	3800		3800	1800	Shrd	1900	Shrd	3500		1800	
X or Volume/Capacity	0.71	0.33		0.72	0.12	-	0.73	-	0.74		0.44	
Effective Green (sec)	20	50		28	120	-	36	-	28		28	
Split Time (sec)	22	52		30	120	-	38	-	30		30	
Min. Time or Ped. Time (sec)	8	20		20	20	-	32	-	12		12	
Delay - 15 min pk (sec/veh)	47	24		47	0	-	46	-	49		43	
Level of Service (LOS)	D	C+		D	A	-	D	-	D		D	
Average 'Q' (veh/ln)	6	5		8	0	-	10	-	8		5	
Design 'Q'-ft/ln (1.5*Qavg)	180	160		240	0	-	300	-	240		160	
Available Storage (ft)	2											
Do Vehicles Clear?	YES	YES		YES	YES	-	YES	-	YES		YES	

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	40	Weighted Average Delay (seconds) =	48
Level of Service - LOS =	D+	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.73
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

69

Existing Traffic with Existing Lane Geometrics

Lemon Street
La Palma Ave at Anaheim Blvd (West)

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L*	T	R	L	T*	R	L	T*	R	L*	T	R
Movement 1: 23 secs	X	X			X	X						
Movement 2: 33 secs		X			X	X						
Movement 3: 36 secs					X	X	X	X				
Movement 4: 28 secs					X					X		X
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	P	2		2	1	S	1	S	2		1	
Unadjusted Volume	322	606		863	545	56	397	11	655		325	
Peak Hour Factor (PHF)	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Min/Ped Time Override (sec)	8	20		20	20	32	32	32	12		12	
Permissive Veh/Cycle	2											
Progression Adj. Factor (PAF)	P/P	1.00		1.00	1.00	-	1.00	-	1.00		1.00	

Output

	***			***			***			***		
Peak Hour Volume (vph)	322	606		863	545	56	397	11	655		325	
Saturation Flow (vph)	P/P	3800		3800	1800	Shrd	1900	Shrd	3500		1800	
X or Volume/Capacity	0.84	0.35		0.88	0.30	-	0.86	-	0.86		0.83	
Effective Green (sec)	21	54		31	120	-	34	-	26		26	
Split Time (sec)	23	56		33	120	-	36	-	28		28	
Min. Time or Ped. Time (sec)	8	20		20	20	-	32	-	12		12	
Delay - 15 min pk (sec/veh)	58	22		54	0	-	57	-	58		63	
Level of Service (LOS)	E+	C+		D-	A	-	E+	-	E+		E	
Average 'Q' (veh/ln)	8	6		11	0	-	12	-	9		9	
Design 'Q'-ft/ln (1.5*Qavg)	240	180		340	0	-	360	-	280		280	
Available Storage (ft)	2											
Do Vehicles Clear?	YES	YES		YES	YES	-	YES	-	YES		YES	

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	44	Weighted Average Delay (seconds) =	57
Level of Service - LOS =	D	Level of Service - LOS =	E+
		Intersection Capacity Utilization - ICU =	0.86
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

70

Existing Traffic with Existing Lane Geometrics

La Palma Ave at East St

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement Times												
Movement 1: 17 secs	X			X								
Movement 2: 14 secs	X	X	X									
Movement 3: 40 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 2 secs							X	X	X			
Movement 6: 35 secs								X	X		X	X
# of Lanes (#, S, P)	1	2	1	1	2	S	1	2	1	1	2	S
Unadjusted Volume	231	1170	120	159	737	120	85	767	280	58	568	150
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
Min/Ped Time Override (sec)	12	27	27	12	27	27	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	231	1170	120	159	737	120	85	767	280	58	568	150
Saturation Flow (vph)	1800	3800	1800	1800	3800	Shrd	1800	3800	1800	1800	3800	Shrd
X or Volume/Capacity	0.53	0.71	0.15	0.71	0.71	-	0.47	0.69	0.53	0.39	0.69	-
Effective Green (sec)	29	52	52	15	38	-	12	35	35	10	33	-
Split Time (sec)	31	54	54	17	40	-	14	37	37	12	35	-
Min. Time or Ped. Time (sec)	12	27	27	12	27	-	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	44	30	21	67	40	-	60	41	39	59	43	-
Level of Service (LOS)	D	C-	C+	E	D+	-	E+	D	D+	E+	D	-
Average 'Q' (veh/ln)	6	11	2	5	10	-	3	9	7	2	9	-
Design 'Q'-ft/ln (1.5*Qavg)	180	340	60	160	300	-	100	280	220	60	280	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 40	Weighted Average Delay (seconds) = 39
Level of Service - LOS = D+	Level of Service - LOS = D+
Intersection Capacity Utilization - ICU = 0.68	
Predetermined Cycle Length is 120 sec	
Min/Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

70

Existing Traffic with Existing Lane Geometrics

La Palma Ave at East St

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L*	T	R	L	T*	R	L	T*	R	L*	T	R
Movement 1: 20 secs	X			X								
Movement 2: 7 secs	X	X	X									
Movement 3: 45 secs		X	X		X	X						
Movement 4: 13 secs							X			X		
Movement 5: 35 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	S	1	2	1	1	2	S
Unadjusted Volume	323	806	131	233	1021	142	60	868	289	61	613	226
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
Min/Ped Time Override (sec)	12	27	27	12	27	27	12	30	30	12	30	30
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	323	806	131	233	1021	142	60	868	289	61	613	226
Saturation Flow (vph)	1800	3800	1800	1800	3800	Shrd	1800	3800	1800	1800	3800	Shrd
X or Volume/Capacity	0.86	0.51	0.17	0.86	0.85	-	0.36	0.83	0.58	0.37	0.80	-
Effective Green (sec)	25	50	50	18	43	-	11	33	33	11	33	-
Split Time (sec)	27	52	52	20	45	-	13	35	35	13	35	-
Min. Time or Ped. Time (sec)	12	27	27	12	27	-	12	30	30	12	30	-
Delay - 15 min pk (sec/veh)	68	27	23	78	43	-	57	49	43	58	47	-
Level of Service (LOS)	E	C	C+	E-	D	-	E+	D	D	E+	D	-
Average 'Q' (veh/ln)	9	8	3	7	13	-	2	11	7	2	10	-
Design 'Q'-ft/ln (1.5*Qavg)	280	240	100	220	400	-	60	340	220	60	300	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	-

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	46	Weighted Average Delay (seconds) =	49
Level of Service - LOS =	D	Level of Service - LOS =	D
		Intersection Capacity Utilization - ICU =	0.80
Predetermined Cycle Length is 120 sec			
Min./Ped. Times Satisfied			
Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

71

Existing Traffic with Existing Lane Geometrics

State College Blvd at La Palma Ave

Anaheim

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 18 secs	X			X								
Movement 2: 34 secs		X	X		X	X						
Movement 3: 17 secs							X			X		
Movement 4: 19 secs								X	X		X	X
Movement 5: 32 secs								X			X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	S	1	3	S
Unadjusted Volume	171	863	118	196	608	288	166	678	91	451	873	88
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	32	32	12	32	32
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

Peak Hour Volume (vph)	171	863	118	196	608	288	166	678	91	451	873	88
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	0.71	0.85	0.25	0.82	0.60	0.60	0.74	0.54	-	0.88	0.41	-
Effective Green (sec)	16	32	32	16	32	32	15	30	-	34	49	-
Split Time (sec)	18	34	34	18	34	34	17	32	-	36	51	-
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	32	-	12	32	-
Delay - 15 min pk (sec/veh)	66	51	36	76	41	44	70	40	-	61	26	-
Level of Service (LOS)	E	D-	D+	E-	D	D	E	D	-	E	C	-
Average 'Q' (veh/ln)	5	11	3	6	7	7	5	6	-	11	6	-
Design 'Q'-ft/ln (1.5*Qavg)	160	340	100	180	220	220	160	180	-	340	180	-
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	-

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 46	Weighted Average Delay (seconds) = 52
Level of Service - LOS = D	Level of Service - LOS = D-
Intersection Capacity Utilization - ICU = 0.77	
Predetermined Cycle Length is 120 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
WEbster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

71

Existing Traffic with Existing Lane Geometrics

State College Blvd at La Palma Ave

Anaheim

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 36 secs	X			X								
Movement 2: 24 secs		X	X		X	X						
Movement 3: 28 secs							X			X		
Movement 4: 0 secs							X	X	X			
Movement 5: 32 secs								X	X		X	X
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	2	1	1	2	1	1	3	S	1	3	S
Unadjusted Volume	534	582	76	350	760	262	433	1154	69	385	1011	111
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
Min/Ped Time Override (sec)	12	31	31	12	31	31	12	32	32	12	32	32
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	-

Output

	***			***			***			***		
Peak Hour Volume (vph)	534	582	76	350	760	262	433	1154	69	385	1011	111
Saturation Flow (vph)	1800	3800	1800	1800	3800	1800	1800	5700	Shrd	1800	5700	Shrd
X or Volume/Capacity	1.05	0.84	0.23	0.69	1.09	0.79	1.11	0.86	-	0.99	0.79	-
Effective Green (sec)	34	22	22	34	22	22	26	30	-	26	30	-
Split Time (sec)	36	24	24	36	24	24	28	32	-	28	32	-
Min. Time or Ped. Time (sec)	12	31	31	12	31	31	12	32	-	12	32	-
Delay - 15 min pk (sec/veh)	97	59	43	46	112	64	127	50	-	89	46	-
Level of Service (LOS)	F	E+	D	D	F	E	F	D	-	F	D	-
Average 'Q' (veh/ln)	15	8	2	8	12	7	14	10	-	11	9	-
Design 'Q'-ft/ln (1.5*Qavg)	480	240	60	240	360	220	420	300	-	340	280	-
Do Vehicles Clear?	NO	YES	YES	YES	NO	YES	NO	YES	-	NO	YES	-

Summary of Results

Oversaturated - Mitigation Required	
Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 72	Weighted Average Delay (seconds) = 86
Level of Service - LOS = E	Level of Service - LOS = F
Intersection Capacity Utilization - ICU = 1.00	
Predetermined Cycle Length is 120 sec Min./Ped. Times May Not Be Satisfied Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

72

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at SR-57 SB Off-Ramp

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 68 secs		X			X							
Movement 2: 52 secs										X		X
Movement 3: 0 secs												
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)		3			3					2		1
Unadjusted Volume		1380			1937					907		361
Peak Hour Factor (PHF)		1.00			1.00					1.00		1.00
Min/Ped Time Override (sec)		24			24					15		15
Progression Adj. Factor (PAF)		1.00			1.00					1.00		1.00

Output

Peak Hour Volume (vph)	1380			1937				907		361
Saturation Flow (vph)	5700			5700				3500		1800
X or Volume/Capacity	0.44			0.62				0.62		0.48
Effective Green (sec)	66			66				50		50
Split Time (sec)	68			68				52		52
Min. Time or Ped. Time (sec)	24			24				15		15
Delay - 15 min pk (sec/veh)	16			19				30		28
Level of Service (LOS)	B			B				C		C
Average 'Q' (veh/ln)	7			10				9		7
Design 'Q'-ft/ln (1.5*Qavg)	220			300				280		220
Do Vehicles Clear?	YES			YES				YES		YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	22	Weighted Average Delay (seconds) =	23
Level of Service - LOS =	C+	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.62
Predetermined Cycle Length is 120 sec Min/Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

12

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at SR-57 SB Off-Ramp

Caltrans

PM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 71 secs		X			X							
Movement 2: 49 secs										X		X
Movement 3: 0 secs												
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)		3			3					2		1
Unadjusted Volume		1605			1997					722		434
Peak Hour Factor (PHF)		1.00			1.00					1.00		1.00
Min/Ped Time Override (sec)		24			24					15		15
Progression Adj. Factor (PAF)		1.00			1.00					1.00		1.00

Output

Peak Hour Volume (vph)	1605		1997			722	434
Saturation Flow (vph)	5700		5700			3500	1800
X or Volume/Capacity	0.49		0.61			0.53	0.62
Effective Green (sec)	69		69			47	47
Split Time (sec)	71		71			49	49
Min. Time or Ped. Time (sec)	24		24			15	15
Delay - 15 min pk (sec/veh)	16		18			29	33
Level of Service (LOS)	B		B			C	C-
Average 'Q' (veh/ln)	8		9			7	9
Design 'Q'-ft/ln (1.5*Qavg)	240		280			220	280
Do Vehicles Clear?	YES		YES			YES	YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	21	Weighted Average Delay (seconds) =	21
Level of Service - LOS =	C+	Level of Service - LOS =	C+
		Intersection Capacity Utilization - ICU =	0.61
Predetermined Cycle Length is 120 sec Min/Ped. Times Satisfied Analysis Based on User Selected Splits			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

73

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at SR-57 NB Off-Ramp

Caltrans

AM Peak Hour

Parameter Values (using default set 'Other Values')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)	12	10	Sat Flow (1 Left lane, vphg)		1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)		3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)		1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	*R*	L	*T*	R	L	T	R
Movement 1: 15 secs	X	X										X
Movement 2: 57 secs		X			X	X						
Movement 3: 48 secs							X	X	X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3		3	1	S	2	2				2
Unadjusted Volume	61	1785		1408	621	924	61	535				32
Peak Hour Factor (PHF)	1.00	1.00		1.00	1.00	1.00	1.00	1.00				1.00
Sat. Flow Override (vph)						Shrd	3500					
Min/Ped Time Override (sec)	12	28		28	28	24	24	24				15
Progression Adj. Factor (PAF)	1.00	1.00		1.00	1.00	-	1.00	1.00				1.00

Output

	***			***			***					
Peak Hour Volume (vph)	61	1785		1408	621	924	61	535				32
Saturation Flow (vph)	1800	5700		5700	1800	Shrd	3500	3400				3400
X or Volume/Capacity	0.31	0.54		0.54	0.75	-	0.73	0.41				0.09
Effective Green (sec)	13	70		55	55	-	46	46				13
Split Time (sec)	15	72		57	57	-	48	48				15
Min. Time or Ped. Time (sec)	12	28		28	28	-	24	24				15
Delay - 15 min pk (sec/veh)	54	16		24	33	-	35	28				49
Level of Service (LOS)	D-	B		C+	C-	-	D+	C				D
Average 'Q' (veh/ln)	2	8		8	11	-	10	5				1
Design 'Q'-ft/ln (1.5*Qavg)	60	240		240	340	-	300	160				40
Do Vehicles Clear?	YES	YES		YES	YES	-	YES	YES				YES

Summary of Results

Whole Intersection		Critical Movements	
Weighted Average Delay (seconds) =	26	Weighted Average Delay (seconds) =	36
Level of Service - LOS =	C	Level of Service - LOS =	D+
		Intersection Capacity Utilization - ICU =	0.70
Predetermined Cycle Length is 120 sec Min./Ped. Times Satisfied			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

13

Existing Traffic with Existing Lane Geometrics

Imperial Hwy at SR-57 NB Off-Ramp

Caltrans

PM Peak Hour

Parameter Values (using default set 'Other Values')

Parameter	Other	Default	Min. Time Parameter	Other	Default	Sat. Flow Parameter	Other	Default
Duration of Peak Period (min)		15	Min. Time (Left Turns, sec)	12	10	Sat Flow (1 Left lane, vphg)		1800
Lost Time (sec)		2	Min/Ped Time (Thrus, sec)	Varies	Varies	Sat Flow (2 Left lanes, vphg)		3500
Vehicle Length (feet)		20				Sat Flow (1 Thru lane, vphg)		1900
						Sat Flow (1 Right lane, vphg)		1800

Input Values

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	*R*	L	T	*R*	L	T	*R*
Movement Times												
Movement 1: 15 secs	X	X										X
Movement 2: 74 secs		X			X	X						
Movement 3: 31 secs							X	X	X			
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)	1	3			3	1	S	3	1			2
Unadjusted Volume	161	2026			1820	986	749	31	392			336
Peak Hour Factor (PHF)	1.00	1.00			1.00	1.00	1.00	1.00	1.00			1.00
Sat. Flow Override (vph)							Shrd	4800				
Min/Ped Time Override (sec)	12	28			28	28	24	24	24			15
Progression Adj. Factor (PAF)	1.00	1.00			1.00	1.00	-	1.00	1.00			1.00

Output

Peak Hour Volume (vph)	161	2026			1820	986	749	31	392			336
Saturation Flow (vph)	1800	5700			5700	1800	Shrd	4800	1800			3400
X or Volume/Capacity	0.83	0.49			0.53	0.91	-	0.67	0.90			0.91
Effective Green (sec)	13	87			72	72	-	29	29			13
Split Time (sec)	15	89			74	74	-	31	31			15
Min. Time or Ped. Time (sec)	12	28			28	28	-	24	24			15
Delay - 15 min pk (sec/veh)	84	7			15	34	-	44	68			82
Level of Service (LOS)	F	A			B	C	-	D	E			F
Average 'Q' (veh/ln)	5	6			8	14	-	7	11			5
Design 'Q'-ft/ln (1.5*Qavg)	160	180			240	420	-	220	340			160
Do Vehicles Clear?	YES	YES			YES	YES	-	YES	YES			YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 28	Weighted Average Delay (seconds) = 52
Level of Service - LOS = C	Level of Service - LOS = D-
Intersection Capacity Utilization - ICU = 0.91	
Predetermined Cycle Length is 120 sec	
Min./Ped. Times Satisfied	
Analysis Based on User Selected Splits	

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

74

Existing Traffic with Existing Lane Geometrics

Yorba Linda Blvd at SR-57 SB Off-Ramp

Caltrans

AM Peak Hour

Parameter Values (using default set 'Webster')

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

Input Values

Movement Times	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement 1: 48 secs		X			X							
Movement 2: 52 secs										X		X
Movement 3: 0 secs												
Movement 4: 0 secs												
Movement 5: 0 secs												
Movement 6: 0 secs												
# of Lanes (#, S, P)		3			3					1		1
Unadjusted Volume		745			1227					282		426
Peak Hour Factor (PHF)		1.00			1.00					1.00		1.00
Min/Ped Time Override (sec)		20			20					22		22
Progression Adj. Factor (PAF)		1.00			1.00					1.00		1.00

Output

Peak Hour Volume (vph)	745		1227				282		426
Saturation Flow (vph)	5700		5700				1800		1800
X or Volume/Capacity	0.28		0.47				0.31		0.47
Effective Green (sec)	46		46				50		50
Split Time (sec)	48		48				52		52
Min. Time or Ped. Time (sec)	20		20				22		22
Delay - 15 min pk (sec/veh)	17		19				16		18
Level of Service (LOS)	B		B				B		B
Average 'Q' (veh/ln)	4		6				4		6
Design 'Q'-ft/ln (1.5*Qavg)	120		180				120		180
Do Vehicles Clear?	YES		YES				YES		YES

Summary of Results

Whole Intersection	Critical Movements
Weighted Average Delay (seconds) = 19	Weighted Average Delay (seconds) = 19
Level of Service - LOS = B	Level of Service - LOS = B
Intersection Capacity Utilization - ICU = 0.47	
Predetermined Cycle Length is 100 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits	