Intersection of:

Main Street

and

"I" Avenue

WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

Existing Traffic with Existing Geometrics

MAIN STREET AND I AVENUE | **HFI, INC** | **AM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	*L*	T	R	L	*T*	R	*L*	T	R	L	*T*	R
Movement 1: 10 secs	X			X								X
Movement 2: 0 secs	X	X	X									X
Movement 3: 23 secs		X	X		X	X						
Movement 4: 10 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 20 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	2	2	S	2	2	1	1	2	1
Unadjusted Volume	230	295	145	80	735	45	230	260	35	10	175	160
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)						Shrd						
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

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

	Other	Default
Duration of Peak Period (min)		15
Lost Time (sec)		2
Min. Time (Left Turns, sec)		10
Min/Ped Time (Thru Lanes, sec)		20
Sat Flow (1 Left lane, vphg)	1700	1800
Sat Flow (2 Left lanes, vphg)	3200	3500
Sat Flow (1 Thru lane, vphg)	1800	1900
Sat Flow (1 Right lane, vphg)		1800
Vehicle Length (feet)		20

Output

	***				***		***				***	
Pk. Hr. Vol. (vph)	230	295	145	80	735	45	230	260	35	10	175	160
Saturation Flow (vph)	3200	3600	1800	3200	3600	Shrd	3200	3600	1800	1700	3600	1800
X or V/C	0.57	0.25	0.24	0.20	0.65	-	0.57	0.25	0.07	0.05	0.17	0.20
Effective green (sec)	8	21	21	8	21	-	8	18	18	8	18	28
Split Time (sec)	10	23	23	10	23	-	10	20	20	10	20	30
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	10	20	20
Delay - 15 min pk (sec/veh)	31	16	16	26	21	-	31	18	17	25	17	11
Level of Service (LOS)	C-	B	B	C	C+	-	C-	B	B	C+	B	B
Average 'Q' (veh/ln)	2	2	2	1	5	-	2	2	1	1	1	2
Design 'Q'- ft/ln	60	60	60	40	160	-	60	60	40	40	40	60
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary

Whole Intersection

Weighted Avg Delay (sec) = 21
Level of Service - LOS = C+

Critical Movements

Weighted Avg Delay (sec) = 24
Level of Service - LOS = C+
Intersection Capacity Utilization - ICU = 0.47

Required Cycle Length is 63 sec

Min./Ped. Times Satisfied

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: "I"
EAST-WEST STREET: MAIN
JURISDICTION: HESPERIA

DATE: 05-18-10

PEAK HOUR: 07:45AM

NORTH LEG

TOTAL: 358

	Rt	Thru	Lt	Total
	165	140	53	
1st	40	43	2	598
2nd	35	37	16	506
3rd	46	23	18	470
4th	44	37	17	470

160 175 10

245 Rt

735 Thru

80 Lt

EAST LEG TOTAL: 638

	1st	2nd	3rd	4th	Total
Rt	11	8	3	6	28
Thru	184	116	123	150	573
Lt	20	8	3	6	37

WEST LEG TOTAL: 614

	Total	1st	2nd	3rd	4th
Lt 230	203	57	70	38	38
Thru 295	309	74	73	88	74
Rt 145	102	36	19	30	17

SOUTH LEG

TOTAL: 434

	Lt	Thru	Rt
	230	260	35
1st	57	65	9
2nd	52	65	7
3rd	48	49	1
4th	45	31	5
Total	202	210	22

PEAK HOUR FACTORS

NORTH LEG = 0.91
SOUTH LEG = 0.83
EAST LEG = 0.74
WEST LEG = 0.92

ALL LEGS = 0.85

HOUR TOTAL: 2,044

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: "I"

EAST-WEST STREET: MAIN

TIME: 07:00AM-08:00AM DATE: 05-18-10

NORTH LEG

Rt	Thru	Lt	
124	134	17	Total
36	35	7	1st
19	28	3	2nd
29	28	5	3rd
40	43	2	4th

	1st	2nd	3rd	4th	Total
Rt	14	10	9	11	44
Thru	136	143	146	184	609
Lt	12	10	10	20	52

Total	1st	2nd	3rd	4th	
148	34	28	29	57	Lt
241	50	60	57	74	Thru
103	20	22	25	36	Rt

	Lt	Thru	Rt
1st	55	60	9
2nd	47	32	2
3rd	54	48	5
4th	57	65	9
Total	213	205	25

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: "I"

EAST-WEST STREET: MAIN

TIME: 08:00AM-09:00AM DATE: 05-18-10

NORTH LEG

Rt	Thru	Lt	
166	140	60	Total
35	37	16	1st
46	23	18	2nd
44	37	17	3rd
41	43	9	4th

	1st	2nd	3rd	4th	Total
Rt	8	3	6	8	25
Thru	116	123	150	131	520
Lt	8	3	6	7	24

Total	1st	2nd	3rd	4th	
192	70	38	38	46	Lt
329	73	88	74	94	Thru
82	19	30	17	16	Rt

	Lt	Thru	Rt
1st	52	65	7
2nd	48	49	1
3rd	45	31	5
4th	41	50	9
Total	186	195	22

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : "I"
EAST-WEST STREET : MAIN

HESPERIA
05-18-10

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4 (+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
						NORTH LEG						
33	35	7	1	0	0	2	0	0	0	0	0	78
15	24	3	3	3	0	0	1	0	1	0	0	50
27	28	5	1	0	0	0	0	0	1	0	0	62
40	43	2	0	0	0	0	0	0	0	0	0	85
34	36	16	0	0	0	0	0	0	1	1	0	88
44	23	18	2	0	0	0	0	0	0	0	0	87
43	37	17	0	0	0	0	0	0	1	0	0	98
40	43	9	1	0	0	0	0	0	0	0	0	93
276	269	77	8	3	0	2	1	0	4	1	0	641
						SOUTH LEG						
8	60	54	1	0	1	0	0	0	0	0	0	124
2	29	46	0	3	1	0	0	0	0	0	0	81
5	45	53	0	3	1	0	0	0	0	0	0	107
8	65	56	1	0	1	0	0	0	0	0	0	131
7	64	51	0	0	1	0	1	0	0	0	0	124
1	49	48	0	0	0	0	0	0	0	0	0	98
5	30	45	0	1	0	0	0	0	0	0	0	81
9	46	40	0	4	1	0	0	0	0	0	0	100
45	388	393	2	11	6	0	1	0	0	0	0	846
						EAST LEG						
14	129	12	0	3	0	0	3	0	0	1	0	162
10	135	8	0	2	2	0	3	0	0	3	0	163
9	143	10	0	0	0	0	3	0	0	0	0	165
10	173	19	1	8	1	0	0	0	0	3	0	215
8	110	8	0	2	0	0	3	0	0	1	0	132
3	118	3	0	1	0	0	3	0	0	1	0	129
5	149	6	1	1	0	0	0	0	0	0	0	162
7	128	7	0	0	0	0	2	0	1	1	0	146
66	1085	73	2	17	3	0	17	0	1	10	0	1274
						WEST LEG						
20	47	32	0	0	2	0	1	0	0	2	0	104
20	54	21	2	4	5	0	1	1	0	1	1	110
24	51	28	1	4	0	0	1	1	0	1	0	111
35	71	52	1	2	3	0	1	1	0	0	1	167
16	61	68	3	7	2	0	4	0	0	1	0	162
30	85	37	0	1	1	0	1	0	0	1	0	156
17	73	38	0	0	0	0	0	0	0	1	0	129
15	93	46	0	1	0	0	0	0	1	0	0	156
177	535	322	7	19	13	0	9	3	1	7	2	1095

Prepared by Newport Traffic Studies

Version 2.0.9

06-02-2010

WEBSTER

WEbster Based Signal Timing Evaluation Routine

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

Existing Traffic with Existing Geometrics

MAIN STREET AND I AVENUE | **HFI, INC** | **PM Peak Hour**

Input

	Eastbound			Westbound			Northbound			Southbound		
Movement Times	L	*T*	R	*L*	T	R	*L*	T	R	L	*T*	R
Movement 1: 10 secs	X			X								X
Movement 2: 8 secs	X	X	X									X
Movement 3: 20 secs		X	X		X	X						
Movement 4: 12 secs							X			X		
Movement 5: 0 secs							X	X	X			
Movement 6: 20 secs								X	X		X	X
# of Lanes (#, S, P)	2	2	1	2	2	S	2	2	1	1	2	1
Unadjusted Volume	275	950	215	120	435	25	315	160	55	110	310	190
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (%)												
Project Trip Volume (vph)												
Sat. Flow Override (vph)						Shrd						
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20
Permissive Veh/Cycle												
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00

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

	Other	Default
Duration of Peak Period (min)		15
Lost Time (sec)		2
Min. Time (Left Turns, sec)		10
Min/Ped Time (Thru Lanes, sec)		20
Sat Flow (1 Left lane, vphg)	1700	1800
Sat Flow (2 Left lanes, vphg)	3200	3500
Sat Flow (1 Thru lane, vphg)	1800	1900
Sat Flow (1 Right lane, vphg)		1800
Vehicle Length (feet)		20

Output

		***		***			***				***	
Pk. Hr. Vol. (vph)	275	950	215	120	435	25	315	160	55	110	310	190
Saturation Flow (vph)	3200	3600	1800	3200	3600	Shrd	3200	3600	1800	1700	3600	1800
X or V/C	0.38	0.71	0.32	0.33	0.50	-	0.69	0.17	0.12	0.45	0.33	0.21
Effective green (sec)	16	26	26	8	18	-	10	18	18	10	18	36
Split Time (sec)	18	28	28	10	20	-	12	20	20	12	20	38
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	10	20	20
Delay - 15 min pk (sec/veh)	24	22	17	31	24	-	37	21	20	33	22	10
Level of Service (LOS)	C+	C+	B	C-	C+	-	D+	C+	C+	C-	C+	A
Average 'Q' (veh/ln)	2	6	3	1	3	-	3	1	1	2	2	2
Design 'Q'- ft/ln	60	180	100	40	100	-	100	40	40	60	60	60
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES

Summary

Whole Intersection

Weighted Avg Delay (sec) = 24
Level of Service - LOS = C+

Critical Movements

Weighted Avg Delay (sec) = 25
Level of Service - LOS = C
Intersection Capacity Utilization - ICU = 0.55

Required Cycle Length is 70 sec

Min./Ped. Times Satisfied

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: "I"
EAST-WEST STREET: MAIN
JURISDICTION: HESPERIA

DATE: 05-18-10

PEAK HOUR: 04:45PM

NORTH LEG

TOTAL: 557

	Rt	Thru	Lt	Total
	149	312	96	
1st	48	78	27	792
2nd	24	90	17	749
3rd	37	70	32	733
4th	40	74	20	753

190 310 110

EAST LEG TOTAL: 585

	1st	2nd	3rd	4th	Total
25 Rt	6	4	8	7	25
435 Thru	109	113	114	135	471
120 Lt	30	46	10	3	89

WEST LEG TOTAL: 1,408

	Total	1st	2nd	3rd	4th
Lt 275	299	69	85	79	66
Thru 950	937	238	206	232	261
Rt 215	172	54	48	28	42

SOUTH LEG

	Lt	Thru	Rt
	315	160	55
1st	79	40	14
2nd	64	48	4
3rd	58	59	6
4th	58	43	4
Total	259	190	28

TOTAL: 477

PEAK HOUR FACTORS

NORTH LEG = 0.91
SOUTH LEG = 0.90
EAST LEG = 0.90
WEST LEG = 0.95

ALL LEGS = 0.96

HOUR TOTAL: 3,027

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: "I"

EAST-WEST STREET: MAIN

TIME: 04:00PM-05:00PM DATE: 05-18-10

NORTH LEG

Rt	Thru	Lt	
138	226	98	Total
11	24	18	1st
44	71	20	2nd
35	53	33	3rd
48	78	27	4th

	1st	2nd	3rd	4th	Total
Rt	1	5	3	6	15
Thru	30	121	129	109	389
Lt	3	18	19	30	70

Total	1st	2nd	3rd	4th	
221	32	52	68	69	Lt
644	54	166	186	238	Thru
155	14	47	40	54	Rt

	Lt	Thru	Rt
1st	23	14	2
2nd	56	32	16
3rd	77	38	0
4th	79	40	14
Total	235	124	32

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: "I"

EAST-WEST STREET: MAIN

TIME: 05:00PM-06:00PM DATE: 05-18-10

NORTH LEG

Rt	Thru	Lt	
137	313	102	Total
24	90	17	1st
37	70	32	2nd
40	74	20	3rd
36	79	33	4th

	1st	2nd	3rd	4th	Total
Rt	4	8	7	7	26
Thru	113	114	135	107	469
Lt	46	10	3	8	67

Total	1st	2nd	3rd	4th	
299	85	79	66	69	Lt
894	206	232	261	195	Thru
153	48	28	42	35	Rt

	Lt	Thru	Rt
1st	64	48	4
2nd	58	59	6
3rd	58	43	4
4th	62	51	8
Total	242	201	22

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : "I"
EAST-WEST STREET : MAIN

HESPERIA
05-18-10

BEGINNING TIME : 04:00PM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
						NORTH LEG						
10	24	17	0	0	1	0	0	0	1	0	0	53
43	70	20	1	0	0	0	1	0	0	0	0	135
35	52	32	0	0	1	0	0	0	0	1	0	121
46	77	27	1	0	0	0	1	0	1	0	0	153
24	90	17	0	0	0	0	0	0	0	0	0	131
35	70	32	1	0	0	0	0	0	1	0	0	139
38	73	20	1	1	0	0	0	0	1	0	0	134
35	79	32	1	0	1	0	0	0	0	0	0	148
266	535	197	5	1	3	0	2	0	4	1	0	1014
						SOUTH LEG						
2	14	23	0	0	0	0	0	0	0	0	0	39
16	30	54	0	1	2	0	1	0	0	0	0	104
0	36	77	0	2	0	0	0	0	0	0	0	115
13	40	79	1	0	0	0	0	0	0	0	0	133
4	48	62	0	0	0	0	0	0	0	0	2	116
6	59	58	0	0	0	0	0	0	0	0	0	123
4	43	58	0	0	0	0	0	0	0	0	0	105
8	51	62	0	0	0	0	0	0	0	0	0	121
53	321	473	1	3	2	0	1	0	0	0	2	856
						EAST LEG						
1	27	3	0	1	0	0	1	0	0	1	0	34
5	119	18	0	0	0	0	1	0	0	1	0	144
3	125	17	0	2	2	0	1	0	0	1	0	151
5	109	30	0	0	0	1	0	0	0	0	0	145
4	110	46	0	0	0	0	1	0	0	2	0	163
8	112	10	0	1	0	0	1	0	0	0	0	132
7	131	3	0	2	0	0	2	0	0	0	0	145
7	106	8	0	1	0	0	0	0	0	0	0	122
40	839	135	0	7	2	1	7	0	0	5	0	1036
						WEST LEG						
14	54	31	0	0	1	0	0	0	0	0	0	100
44	163	52	1	1	0	1	0	0	1	2	0	265
38	183	65	1	1	3	1	1	0	0	1	0	294
54	234	67	0	1	2	0	3	0	0	0	0	361
48	201	82	0	1	2	0	4	0	0	0	1	339
28	230	79	0	1	0	0	1	0	0	0	0	339
42	258	66	0	0	0	0	1	0	0	2	0	369
35	189	67	0	2	1	0	2	1	0	2	0	299
303	1512	509	2	7	9	2	12	1	1	7	1	2366

Prepared by Newport Traffic Studies