Appendix D
Existing plus Project Synchro Output

FRESNO EXISTING PLUS PROJECT CONDITIONS

FRESNO OVERPASS ALTERNATIVE

HCM Unsignalized Intersection Capacity Analysis
1: Broadway St & Monterey St.

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	58	0	0	92	0	0	0	0	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.40
Hourly flow rate (vph)	0	79	0	0	112	0	0	0	0	0	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	112			79			192	192	79	192	192	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	112			79			192	192	79	192	192	112
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	1477			1519			752	703	981	768	703	941

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	79	112	0	0	20
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	20
cSH	1477	1519	1700	1700	941
Volume to Capacity	0.00	0.00	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	8.9
Lane LOS			A	A	A
Approach Delay (s)	0.0	0.0	0.0	8.9	
Approach LOS			A	A	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Broadway St & Monterey St.

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	42	0	0	201	0	0	0	0	0	0	76
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.81	0.81	0.81	0.92	0.92	0.92	0.92	0.92	0.66
Hourly flow rate (vph)	0	58	0	0	248	0	0	0	0	0	0	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	248			58			306	306	58	306	306	248
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248			58			306	306	58	306	306	248
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	85
cM capacity (veh/h)	1318			1546			552	607	1008	646	607	791

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	58	248	0	0	115
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	115
cSH	1318	1546	1700	1700	791
Volume to Capacity	0.00	0.00	0.00	0.00	0.15
Queue Length 95th (ft)	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	10.3
Lane LOS			A	A	B
Approach Delay (s)	0.0	0.0	0.0	10.3	
Approach LOS			A	B	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Van Ness Ave & San Benito St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	268	0	0	196	47	166	82	62	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.90	0.90	0.90	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	22	315	0	0	218	52	195	96	73	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	127	210	145	125	244	121
Volume Left (vph)	22	0	0	0	195	0
Volume Right (vph)	0	0	0	52	0	73
Hadj (s)	0.12	0.03	0.03	-0.26	0.43	-0.39
Departure Headway (s)	6.1	6.0	6.1	5.8	6.5	5.7
Degree Utilization, x	0.22	0.35	0.25	0.20	0.44	0.19
Capacity (veh/h)	559	572	560	585	529	599
Control Delay (s)	9.6	11.1	10.0	9.1	13.3	8.8
Approach Delay (s)	10.5		9.6		11.8	
Approach LOS	B		A		B	

Intersection Summary				
Delay	10.8			
HCM Level of Service	B			
Intersection Capacity Utilization	34.1%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Van Ness Ave & San Benito St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	78	174	0	0	214	52	141	30	41	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.82	0.82	0.82	0.80	0.80	0.80	0.92	0.92	0.92
Hourly flow rate (vph)	94	210	0	0	261	63	176	38	51	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	164	140	174	150	195	70
Volume Left (vph)	94	0	0	0	176	0
Volume Right (vph)	0	0	0	63	0	51
Hadj (s)	0.32	0.03	0.03	-0.26	0.49	-0.48
Departure Headway (s)	6.1	5.8	5.8	5.5	6.5	5.6
Degree Utilization, x	0.28	0.22	0.28	0.23	0.35	0.11
Capacity (veh/h)	567	595	598	628	521	603
Control Delay (s)	10.2	9.3	9.8	8.9	11.9	8.1
Approach Delay (s)	9.8		9.4		10.9	
Approach LOS	A		A		B	

Intersection Summary			
Delay	10.0		
HCM Level of Service	A		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	126	59	0	6	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.78	0.78	0.60	0.60
Hourly flow rate (vph)	0	156	76	0	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1131				
pX, platoon unblocked						
vC, conflicting volume	76				231	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76				231	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1523				757	986

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	156	76	10	10
Volume Left	0	0	10	0
Volume Right	0	0	0	10
cSH	1700	1700	757	986
Volume to Capacity	0.09	0.04	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	9.8	8.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.3	
Approach LOS			A	

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: 41 SB Off-Ramp &

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	256	98	0	16	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.74	0.74	0.82	0.82	0.75	0.75
Hourly flow rate (vph)	0	346	120	0	21	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1131				
pX, platoon unblocked						
vC, conflicting volume	120				465	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120				465	120
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	99
cM capacity (veh/h)	1468				555	932

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	346	120	21	11
Volume Left	0	0	21	0
Volume Right	0	0	0	11
cSH	1700	1700	555	932
Volume to Capacity	0.20	0.07	0.04	0.01
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.0	11.7	8.9
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.8	
Approach LOS			B	

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Van Ness Ave & 41 SB Off-Ramp

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	118	2	3	357	0	0	0	0	170	13	410
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.84	0.84	0.84	0.92	0.92	0.92	0.71	0.71	0.71
Hourly flow rate (vph)	0	155	3	4	425	0	0	0	0	239	18	577
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		735										
pX, platoon unblocked												
vC, conflicting volume	425			158			385	589	157	589	590	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			158			385	589	157	589	590	212
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	39	96	27
cM capacity (veh/h)	1131			1419			143	418	861	391	418	793

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	158	145	283	450	385
Volume Left	0	4	0	239	0
Volume Right	3	0	0	192	385
cSH	1700	1419	1700	501	793
Volume to Capacity	0.09	0.00	0.17	0.90	0.49
Queue Length 95th (ft)	0	0	0	255	67
Control Delay (s)	0.0	0.2	0.0	47.9	13.8
Lane LOS		A		E	B
Approach Delay (s)	0.0	0.1		32.2	
Approach LOS				D	

Intersection Summary				
Average Delay	18.9			
Intersection Capacity Utilization	37.1%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Van Ness Ave & 41 SB Off-Ramp

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	197	17	11	343	0	0	0	0	58	10	182
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	249	22	13	399	0	0	0	0	72	12	225
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		735										
pX, platoon unblocked												
vC, conflicting volume	399			271			491	685	260	685	695	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	399			271			491	685	260	685	695	199
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	100	78	97	72
cM capacity (veh/h)	1156			1290			321	366	739	332	361	808

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	271	146	266	159	150
Volume Left	0	13	0	72	0
Volume Right	22	0	0	75	150
cSH	1700	1290	1700	464	808
Volume to Capacity	0.16	0.01	0.16	0.34	0.19
Queue Length 95th (ft)	0	1	0	38	17
Control Delay (s)	0.0	0.8	0.0	16.8	10.5
Lane LOS		A		C	B
Approach Delay (s)	0.0	0.3		13.7	
Approach LOS				B	

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	294	0	317	0	0	0	0	587	56	44	308	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2						5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00						0.95		1.00	0.95	
Frt	1.00	0.85						0.99		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583						3493		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.28	1.00	
Satd. Flow (perm)	1770	1583						3493		531	3539	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.72	0.72	0.72	0.78	0.78	0.78
Adj. Flow (vph)	354	0	382	0	0	0	0	815	78	56	395	0
RTOR Reduction (vph)	0	278	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	354	104	0	0	0	0	0	877	0	56	395	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	12.2	12.2						23.0		23.0	23.0	
Effective Green, g (s)	12.2	12.2						23.0		23.0	23.0	
Actuated g/C Ratio	0.27	0.27						0.52		0.52	0.52	
Clearance Time (s)	4.2	4.2						5.2		5.2	5.2	
Vehicle Extension (s)	5.2	5.2						0.2		0.2	0.2	
Lane Grp Cap (vph)	484	433						1801		274	1825	
v/s Ratio Prot	c0.20	0.07						c0.25			0.11	
v/s Ratio Perm										0.11		
v/c Ratio	0.73	0.24						0.49		0.20	0.22	
Uniform Delay, d1	14.7	12.6						7.0		5.8	5.9	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	7.0	0.6						0.1		0.1	0.0	
Delay (s)	21.7	13.2						7.1		6.0	5.9	
Level of Service	C	B						A		A	A	
Approach Delay (s)		17.3			0.0			7.1			5.9	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	9.4
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: SR99 S Off-ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	149	2	198	0	0	0	0	561	33	114	382	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2						5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00						0.95		1.00	0.95	
Frt	1.00	0.85						0.99		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1586						3510		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.41	1.00	
Satd. Flow (perm)	1770	1586						3510		757	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	159	2	211	0	0	0	0	610	36	121	406	0
RTOR Reduction (vph)	0	168	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	159	45	0	0	0	0	0	637	0	121	406	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	8.6	8.6						23.8		23.8	23.8	
Effective Green, g (s)	8.6	8.6						23.8		23.8	23.8	
Actuated g/C Ratio	0.21	0.21						0.57		0.57	0.57	
Clearance Time (s)	4.2	4.2						5.2		5.2	5.2	
Vehicle Extension (s)	5.2	5.2						0.2		0.2	0.2	
Lane Grp Cap (vph)	364	326						1999		431	2015	
v/s Ratio Prot	c0.09	0.03						c0.18			0.11	
v/s Ratio Perm										0.16		
v/c Ratio	0.44	0.14						0.32		0.28	0.20	
Uniform Delay, d1	14.5	13.6						4.7		4.6	4.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.4						0.0		0.1	0.0	
Delay (s)	16.4	14.0						4.8		4.7	4.4	
Level of Service	B	B						A		A	A	
Approach Delay (s)		15.0			0.0			4.8			4.5	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	9.4
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: SR99 N On-Ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	31	7	83	326	550	0	0	318	105
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.70	0.70	0.70	0.76	0.76	0.76	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	44	10	119	429	724	0	0	370	122
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								284			1117	
pX, platoon unblocked												
vC, conflicting volume	1774	2012	246	1766	2073	362	492			724		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1774	2012	246	1766	2073	362	492			724		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	69	81	60			100		
cM capacity (veh/h)	23	35	754	36	32	635	1068			875		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	49	124	429	362	362	247	245
Volume Left	44	0	429	0	0	0	0
Volume Right	0	119	0	0	0	0	122
cSH	36	359	1068	1700	1700	1700	1700
Volume to Capacity	1.37	0.34	0.40	0.21	0.21	0.15	0.14
Queue Length 95th (ft)	130	37	49	0	0	0	0
Control Delay (s)	450.8	20.2	10.6	0.0	0.0	0.0	0.0
Lane LOS	F	C	B				
Approach Delay (s)	142.9		4.0			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	16.1		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: SR99 N On-Ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	23	2	69	275	431	0	0	474	408
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.59	0.59	0.59	0.94	0.94	0.94	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	39	3	117	293	459	0	0	533	458
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								284			1117	
pX, platoon unblocked												
vC, conflicting volume	1695	1805	496	1310	2035	229	991			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1695	1805	496	1310	2035	229	991			459		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	50	90	85	58			100		
cM capacity (veh/h)	32	45	520	78	33	773	693			1099		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	41	119	293	229	229	355	636
Volume Left	39	0	293	0	0	0	0
Volume Right	0	117	0	0	0	0	458
cSH	74	584	693	1700	1700	1700	1700
Volume to Capacity	0.55	0.20	0.42	0.13	0.13	0.21	0.37
Queue Length 95th (ft)	59	19	53	0	0	0	0
Control Delay (s)	101.9	12.7	13.9	0.0	0.0	0.0	0.0
Lane LOS	F	B	B				
Approach Delay (s)	35.5		5.4			0.0	
Approach LOS	E						

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	21	4	27	14	10	13	41	601	3	1	377	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.71	0.71	0.71	0.84	0.84	0.84
Hourly flow rate (vph)	26	5	33	15	11	14	58	846	4	1	449	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								595			806	
pX, platoon unblocked												
vC, conflicting volume	1024	1432	239	1227	1445	425	479			851		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1024	1432	239	1227	1445	425	479			851		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	96	96	87	91	98	95			100		
cM capacity (veh/h)	165	126	762	120	124	577	1080			783		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	64	40	481	427	226	254
Volume Left	26	15	58	0	1	0
Volume Right	33	14	0	4	0	30
cSH	268	168	1080	1700	783	1700
Volume to Capacity	0.24	0.24	0.05	0.25	0.00	0.15
Queue Length 95th (ft)	23	22	4	0	0	0
Control Delay (s)	22.6	33.0	1.6	0.0	0.1	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	22.6	33.0	0.8		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	33	2	80	9	9	18	56	435	5	2	796	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.75	0.75	0.75	0.89	0.89	0.89	0.88	0.88	0.88
Hourly flow rate (vph)	49	3	118	12	12	24	63	489	6	2	905	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								595			806	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1326	1546	469	1193	1561	247	939			494		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1162	1404	221	1016	1419	247	736			494		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	57	97	83	91	89	97	92			100		
cM capacity (veh/h)	114	116	713	134	113	753	788			1066		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	169	48	307	250	455	486
Volume Left	49	12	63	0	2	0
Volume Right	118	24	0	6	0	34
cSH	275	211	788	1700	1066	1700
Volume to Capacity	0.62	0.23	0.08	0.15	0.00	0.29
Queue Length 95th (ft)	94	21	6	0	0	0
Control Delay (s)	37.1	27.0	2.8	0.0	0.1	0.0
Lane LOS	E	D	A		A	
Approach Delay (s)	37.1	27.0	1.5		0.0	
Approach LOS	E	D				

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	56.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	17	8	60	38	79	105	456	147	51	310	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3373		1770	1674		1770	3410		1770	3367	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3373		1770	1674		1770	3410		1770	3367	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.79	0.79	0.79	0.95	0.95	0.95
Adj. Flow (vph)	22	22	10	79	50	104	133	577	186	54	326	157
RTOR Reduction (vph)	0	9	0	0	62	0	0	22	0	0	45	0
Lane Group Flow (vph)	22	23	0	79	92	0	133	741	0	54	438	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.9	5.9		13.5	13.5		8.3	24.1		4.2	20.0	
Effective Green, g (s)	5.9	5.9		13.5	13.5		8.3	24.1		4.2	20.0	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.12	0.36		0.06	0.30	
Clearance Time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	156	297		356	337		219	1225		111	1004	
v/s Ratio Prot	c0.01	0.01		0.04	c0.06		c0.08	c0.22		0.03	0.13	
v/s Ratio Perm												
v/c Ratio	0.14	0.08		0.22	0.27		0.61	0.61		0.49	0.44	
Uniform Delay, d1	28.3	28.1		22.4	22.7		27.9	17.6		30.4	19.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.2		3.2	0.6		1.2	0.1	
Delay (s)	28.4	28.1		22.5	22.8		31.1	18.2		31.6	19.1	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		28.3			22.7			20.1			20.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	15.2
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	28	89	24	69	18	109	81	421	179	105	674	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.87		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3426		1770	1622		1770	3381		1770	3474	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3426		1770	1622		1770	3381		1770	3474	
Peak-hour factor, PHF	0.62	0.62	0.62	0.84	0.84	0.84	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	45	144	39	82	21	130	89	463	197	112	717	100
RTOR Reduction (vph)	0	21	0	0	109	0	0	36	0	0	8	0
Lane Group Flow (vph)	45	162	0	82	42	0	89	624	0	112	809	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.3	12.3		12.3	12.3		7.2	23.5		7.9	24.2	
Effective Green, g (s)	12.3	12.3		12.3	12.3		7.2	23.5		7.9	24.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.10	0.31		0.10	0.32	
Clearance Time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	289	559		289	265		169	1054		185	1115	
v/s Ratio Prot	0.03	c0.05		c0.05	0.03		0.05	0.18		c0.06	c0.23	
v/s Ratio Perm												
v/c Ratio	0.16	0.29		0.28	0.16		0.53	0.59		0.61	0.73	
Uniform Delay, d1	27.1	27.7		27.7	27.1		32.5	21.9		32.3	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.2	0.1		1.4	0.6		3.8	2.0	
Delay (s)	27.2	27.8		27.9	27.2		33.8	22.5		36.1	24.7	
Level of Service	C	C		C	C		C	C		D	C	
Approach Delay (s)		27.7			27.4			23.9			26.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	15.2
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	20	75	33	199	522	137	55	384	42	38	246	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1778		1770	1863	1583	1770	3487		1770	3411	
Flt Permitted	0.25	1.00		0.67	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	467	1778		1246	1863	1583	1770	3487		1770	3411	
Peak-hour factor, PHF	0.78	0.78	0.78	0.87	0.87	0.87	0.80	0.80	0.80	0.83	0.83	0.83
Adj. Flow (vph)	26	96	42	229	600	157	69	480	52	46	296	94
RTOR Reduction (vph)	0	15	0	0	0	30	0	8	0	0	31	0
Lane Group Flow (vph)	26	123	0	229	600	127	69	524	0	46	359	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	36.2	36.2		36.2	36.2	36.2	9.2	22.9		4.0	17.7	
Effective Green, g (s)	36.2	36.2		36.2	36.2	36.2	9.2	22.9		4.0	17.7	
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.12	0.30		0.05	0.23	
Clearance Time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Vehicle Extension (s)	4.8	4.8		4.8	4.8	4.8	2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	224	852		597	893	759	216	1058		94	800	
v/s Ratio Prot		0.07			c0.32		0.04	c0.15		0.03	c0.11	
v/s Ratio Perm	0.06			0.18		0.08						
v/c Ratio	0.12	0.14		0.38	0.67	0.17	0.32	0.50		0.49	0.45	
Uniform Delay, d1	10.8	11.0		12.5	15.1	11.1	30.3	21.6		34.8	24.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		0.8	2.5	0.2	0.3	0.7		1.5	0.8	
Delay (s)	11.3	11.1		13.3	17.6	11.3	30.6	22.3		36.2	25.5	
Level of Service	B	B		B	B	B	C	C		D	C	
Approach Delay (s)		11.2			15.6			23.2			26.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	81	175	59	198	282	62	38	382	40	34	532	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1792		1770	1863	1583	1770	3489		1770	3465	
Flt Permitted	0.46	1.00		0.53	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	860	1792		987	1863	1583	1770	3489		1770	3465	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	92	199	67	228	324	71	41	411	43	42	657	107
RTOR Reduction (vph)	0	13	0	0	0	30	0	7	0	0	11	0
Lane Group Flow (vph)	92	253	0	228	324	41	41	447	0	42	753	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	25.7	25.7		25.7	25.7	25.7	3.6	24.5		3.6	24.5	
Effective Green, g (s)	25.7	25.7		25.7	25.7	25.7	3.6	24.5		3.6	24.5	
Actuated g/C Ratio	0.39	0.39		0.39	0.39	0.39	0.05	0.37		0.05	0.37	
Clearance Time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Vehicle Extension (s)	4.8	4.8		4.8	4.8	4.8	2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	334	696		383	723	615	96	1291		96	1282	
v/s Ratio Prot		0.14			0.17		0.02	c0.13		0.02	c0.22	
v/s Ratio Perm	0.11			c0.23		0.03						
v/c Ratio	0.28	0.36		0.60	0.45	0.07	0.43	0.35		0.44	0.59	
Uniform Delay, d1	13.9	14.4		16.1	15.0	12.7	30.3	15.1		30.3	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.6		3.6	0.9	0.1	1.1	0.3		1.2	1.0	
Delay (s)	14.7	15.0		19.7	15.9	12.8	31.4	15.4		31.5	17.8	
Level of Service	B	B		B	B	B	C	B		C	B	
Approach Delay (s)		15.0			16.9			16.7			18.5	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	8.4
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: M St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	38	183	19	0	0	0	0	390	20	24	412	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5042	1583					3513		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.45	1.00	
Satd. Flow (perm)		5042	1583					3513		842	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.81	0.81	0.81	0.84	0.84	0.84
Adj. Flow (vph)	42	203	21	0	0	0	0	481	25	29	490	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	245	8	0	0	0	0	501	0	29	490	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		20.0	20.0					25.0		25.0	25.0	
Effective Green, g (s)		20.0	20.0					25.0		25.0	25.0	
Actuated g/C Ratio		0.37	0.37					0.47		0.47	0.47	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		2.0	2.0					2.0		2.0	2.0	
Lane Grp Cap (vph)		1888	593					1645		394	1657	
v/s Ratio Prot		c0.05						c0.14			0.14	
v/s Ratio Perm			0.00							0.03		
v/c Ratio		0.13	0.01					0.30		0.07	0.30	
Uniform Delay, d1		11.0	10.5					8.8		7.8	8.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.0		0.0	0.0	
Delay (s)		11.0	10.5					8.8		7.9	8.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		11.0			0.0			8.8			8.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	62	486	11	0	0	0	0	553	17	67	718	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					1.00		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5057	1583					3523		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.39	1.00	
Satd. Flow (perm)		5057	1583					3523		727	3539	
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.94	0.94	0.94	0.81	0.81	0.81
Adj. Flow (vph)	77	600	14	0	0	0	0	588	18	83	886	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	677	5	0	0	0	0	603	0	83	886	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		20.0	20.0					25.0		25.0	25.0	
Effective Green, g (s)		20.0	20.0					25.0		25.0	25.0	
Actuated g/C Ratio		0.37	0.37					0.47		0.47	0.47	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		2.0	2.0					2.0		2.0	2.0	
Lane Grp Cap (vph)		1894	593					1649		340	1657	
v/s Ratio Prot		c0.13						0.17			c0.25	
v/s Ratio Perm			0.00							0.11		
v/c Ratio		0.36	0.01					0.37		0.24	0.53	
Uniform Delay, d1		12.1	10.5					9.1		8.5	10.1	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.1	0.2	
Delay (s)		12.1	10.5					9.2		8.7	10.2	
Level of Service		B	B					A		A	B	
Approach Delay (s)		12.1			0.0			9.2			10.1	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	12	16	79	313	6	85	343	3	8	345	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1767	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	1767	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.65	0.65	0.65	0.86	0.86	0.86	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	37	18	25	92	364	7	104	418	4	10	421	43
RTOR Reduction (vph)	0	0	23	0	0	3	0	0	3	0	0	32
Lane Group Flow (vph)	37	18	2	83	373	4	104	418	1	10	421	11
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	5		6	6		3	8		7	4	
Permitted Phases			5			6			8			4
Actuated Green, G (s)	7.4	7.4	7.4	35.7	35.7	35.7	10.0	31.7	31.7	1.1	22.8	22.8
Effective Green, g (s)	7.4	7.4	7.4	35.7	35.7	35.7	10.0	31.7	31.7	1.1	22.8	22.8
Actuated g/C Ratio	0.08	0.08	0.08	0.39	0.39	0.39	0.11	0.34	0.34	0.01	0.25	0.25
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)	4.9	4.9	4.9	4.9	4.9	4.9	2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	142	149	127	649	682	611	191	1213	542	21	872	390
v/s Ratio Prot	c0.02	0.01		0.05	c0.21		c0.06	0.12		0.01	c0.12	
v/s Ratio Perm			0.00			0.00			0.00			0.01
v/c Ratio	0.26	0.12	0.02	0.13	0.55	0.01	0.54	0.34	0.00	0.48	0.48	0.03
Uniform Delay, d1	40.0	39.5	39.2	18.3	22.1	17.5	39.1	22.7	20.0	45.4	29.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.7	0.1	0.2	1.5	0.0	1.7	0.3	0.0	6.1	0.9	0.1
Delay (s)	42.0	40.3	39.3	18.5	23.6	17.5	40.8	23.0	20.0	51.5	30.7	26.5
Level of Service	D	D	D	B	C	B	D	C	C	D	C	C
Approach Delay (s)		40.7			22.6			26.5			30.7	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.6
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
12: O St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	34	162	56	93	11	43	563	10	5	568	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1764	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	1764	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.70	0.70	0.70	0.86	0.86	0.86	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	121	49	231	65	108	13	47	612	11	6	638	25
RTOR Reduction (vph)	0	0	187	0	0	11	0	0	6	0	0	12
Lane Group Flow (vph)	121	49	44	58	115	2	47	612	5	6	638	13
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	5		6	6		3	8		7	4	
Permitted Phases			5			6			8			4
Actuated Green, G (s)	14.7	14.7	14.7	13.6	13.6	13.6	4.2	30.6	30.6	0.9	27.3	27.3
Effective Green, g (s)	14.7	14.7	14.7	13.6	13.6	13.6	4.2	30.6	30.6	0.9	27.3	27.3
Actuated g/C Ratio	0.19	0.19	0.19	0.18	0.18	0.18	0.05	0.40	0.40	0.01	0.36	0.36
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)	4.9	4.9	4.9	4.9	4.9	4.9	2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	341	358	305	299	314	282	97	1417	634	21	1265	566
v/s Ratio Prot	c0.07	0.03		0.03	c0.07		c0.03	c0.17		0.00	c0.18	
v/s Ratio Perm			0.03			0.00			0.00			0.01
v/c Ratio	0.35	0.14	0.15	0.19	0.37	0.01	0.48	0.43	0.01	0.29	0.50	0.02
Uniform Delay, d1	26.7	25.6	25.6	26.7	27.6	25.8	35.0	16.6	13.8	37.4	19.2	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.4	0.4	0.6	1.5	0.0	1.4	0.4	0.0	2.7	0.6	0.0
Delay (s)	28.0	25.9	26.1	27.4	29.1	25.9	36.4	17.0	13.8	40.2	19.9	15.9
Level of Service	C	C	C	C	C	C	D	B	B	D	B	B
Approach Delay (s)		26.6			28.3			18.3			19.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	20.8
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	35	89	112	40	342	0	0	373	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					4.2	4.2	4.2	4.2			4.2	
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.96	
Flt Protected					0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					3490	1583	1770	3539			3414	
Flt Permitted					0.99	1.00	0.44	1.00			1.00	
Satd. Flow (perm)					3490	1583	822	3539			3414	
Peak-hour factor, PHF	0.92	0.92	0.92	0.69	0.69	0.69	0.81	0.81	0.81	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	51	129	162	49	422	0	0	429	133
RTOR Reduction (vph)	0	0	0	0	0	126	0	0	0	0	36	0
Lane Group Flow (vph)	0	0	0	0	180	36	49	422	0	0	526	0
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					8.0	8.0	20.0	20.0			20.0	
Effective Green, g (s)					8.0	8.0	20.0	20.0			20.0	
Actuated g/C Ratio					0.22	0.22	0.55	0.55			0.55	
Clearance Time (s)					4.2	4.2	4.2	4.2			4.2	
Vehicle Extension (s)					2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)					767	348	452	1945			1876	
v/s Ratio Prot					c0.05			0.12			c0.15	
v/s Ratio Perm						0.02	0.06					
v/c Ratio					0.23	0.10	0.11	0.22			0.28	
Uniform Delay, d1					11.7	11.3	3.9	4.2			4.4	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					0.1	0.0	0.0	0.0			0.0	
Delay (s)					11.7	11.4	4.0	4.2			4.4	
Level of Service					B	B	A	A			A	
Approach Delay (s)		0.0			11.6			4.2			4.4	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	36.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	31	50	119	74	585	0	0	564	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					4.2	4.2	4.2	4.2			4.2	
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.98	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					3473	1583	1770	3539			3473	
Flt Permitted					0.98	1.00	0.37	1.00			1.00	
Satd. Flow (perm)					3473	1583	690	3539			3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	38	61	145	81	643	0	0	648	92
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	99	25	81	643	0	0	728	0
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					6.0	6.0	20.5	20.5			20.5	
Effective Green, g (s)					6.0	6.0	20.5	20.5			20.5	
Actuated g/C Ratio					0.17	0.17	0.59	0.59			0.59	
Clearance Time (s)					4.2	4.2	4.2	4.2			4.2	
Vehicle Extension (s)					2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)					597	272	405	2079			2040	
v/s Ratio Prot					c0.03			0.18			c0.21	
v/s Ratio Perm						0.02	0.12					
v/c Ratio					0.17	0.09	0.20	0.31			0.36	
Uniform Delay, d1					12.3	12.2	3.4	3.6			3.8	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					0.0	0.1	0.1	0.0			0.0	
Delay (s)					12.4	12.2	3.5	3.7			3.8	
Level of Service					B	B	A	A			A	
Approach Delay (s)		0.0			12.3			3.6			3.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	34.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
14: Ventura Ave & S 1st St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	297	4	12	398	153	6	142	5	130	103	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	3520		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.67	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1255	3520		1171	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.75	0.75	0.75	0.79	0.79	0.79
Adj. Flow (vph)	73	323	4	15	491	189	8	189	7	165	130	81
RTOR Reduction (vph)	0	0	0	0	0	90	0	3	0	0	0	63
Lane Group Flow (vph)	73	327	0	15	491	99	8	193	0	165	130	18
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.4	30.8		1.0	27.4	27.4	12.9	12.9		12.9	12.9	12.9
Effective Green, g (s)	4.4	30.8		1.0	27.4	27.4	12.9	12.9		12.9	12.9	12.9
Actuated g/C Ratio	0.08	0.53		0.02	0.47	0.47	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	135	1879		31	1675	749	280	784		261	415	353
v/s Ratio Prot	c0.04	c0.09		0.01	c0.14			0.05			0.07	
v/s Ratio Perm						0.06	0.01			c0.14		0.01
v/c Ratio	0.54	0.17		0.48	0.29	0.13	0.03	0.25		0.63	0.31	0.05
Uniform Delay, d1	25.8	7.0		28.2	9.3	8.6	17.6	18.5		20.4	18.8	17.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.0		4.3	0.0	0.0	0.0	0.1		3.6	0.2	0.0
Delay (s)	28.1	7.0		32.5	9.4	8.6	17.6	18.6		24.0	19.0	17.7
Level of Service	C	A		C	A	A	B	B		C	B	B
Approach Delay (s)		10.9			9.7			18.5			20.9	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	17.8
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	519	7	21	396	255	10	217	16	188	165	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	3502		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.61	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1127	3502		1105	1863	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.77	0.77	0.77	0.91	0.91	0.91	0.89	0.89	0.89
Adj. Flow (vph)	127	552	7	27	514	331	11	238	18	211	185	115
RTOR Reduction (vph)	0	1	0	0	0	167	0	6	0	0	0	84
Lane Group Flow (vph)	127	559	0	27	514	164	11	250	0	211	185	31
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	7.8	33.4		2.3	27.9	27.9	17.9	17.9		17.9	17.9	17.9
Effective Green, g (s)	7.8	33.4		2.3	27.9	27.9	17.9	17.9		17.9	17.9	17.9
Actuated g/C Ratio	0.12	0.50		0.03	0.42	0.42	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	207	1767		61	1478	661	302	938		296	499	424
v/s Ratio Prot	c0.07	0.16		0.02	c0.15			0.07			0.10	
v/s Ratio Perm						0.10	0.01			c0.19		0.02
v/c Ratio	0.61	0.32		0.44	0.35	0.25	0.04	0.27		0.71	0.37	0.07
Uniform Delay, d1	28.1	9.9		31.6	13.3	12.6	18.1	19.3		22.1	19.9	18.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.0		1.9	0.1	0.1	0.0	0.1		6.6	0.2	0.0
Delay (s)	31.8	10.0		33.5	13.3	12.7	18.1	19.3		28.7	20.0	18.3
Level of Service	C	A		C	B	B	B	B		C	C	B
Approach Delay (s)		14.0			13.7			19.3			23.2	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	108	0	7	162	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.89	0.89	0.56	0.56
Hourly flow rate (vph)	120	0	8	182	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	484			1038		
pX, platoon unblocked						
vC, conflicting volume			120		318	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			120		318	120
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1468		672	931

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	120	190	16
Volume Left	0	8	9
Volume Right	0	0	7
cSH	1700	1468	767
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.8
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	148	0	4	164	4	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.89	0.89	0.40	0.40
Hourly flow rate (vph)	164	0	4	184	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	484			1038		
pX, platoon unblocked						
vC, conflicting volume			164		358	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			164		358	164
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	99
cM capacity (veh/h)			1414		639	880

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	164	189	20
Volume Left	0	4	10
Volume Right	0	0	10
cSH	1700	1414	740
Volume to Capacity	0.10	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.2	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	10.0
Approach LOS			A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	88	102	0	0	191	14	0	27	0	5	63	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	1.00
Satd. Flow (prot)	1770	1863			1863	1583		2049			2038	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)	1770	1863			1863	1583		2049			2049	1583
Peak-hour factor, PHF	0.80	0.80	0.92	0.92	0.80	0.80	0.92	0.92	0.92	0.59	0.92	0.59
Adj. Flow (vph)	110	128	0	0	239	18	0	29	0	8	68	263
RTOR Reduction (vph)	0	0	0	0	0	14	0	0	0	0	0	176
Lane Group Flow (vph)	110	128	0	0	239	4	0	29	0	0	76	87
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4!		4!	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	6.5	20.6			10.1	10.1		14.4			14.6	14.4
Effective Green, g (s)	6.5	20.6			10.1	10.1		14.4			14.6	14.4
Actuated g/C Ratio	0.15	0.47			0.23	0.23		0.33			0.34	0.33
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	265	884			434	368		680			689	525
v/s Ratio Prot	c0.06	0.07			c0.13			0.01			0.04	
v/s Ratio Perm						0.00					0.00	c0.06
v/c Ratio	0.42	0.14			0.55	0.01		0.04			0.11	0.17
Uniform Delay, d1	16.7	6.4			14.7	12.8		9.8			9.9	10.3
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.1	0.1			2.4	0.0		0.0			0.1	0.1
Delay (s)	17.8	6.6			17.1	12.8		9.8			10.0	10.3
Level of Service	B	A			B	B		A			A	B
Approach Delay (s)		11.8			16.8			9.8			10.2	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	43.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	74	164	0	0	89	5	0	63	0	10	27	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.98	1.00
Satd. Flow (prot)	1770	1863			1863	1583		2049			2011	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)	1770	1863			1863	1583		2049			2049	1583
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.83	0.83	0.92	0.92	0.92	0.57	0.92	0.57
Adj. Flow (vph)	84	186	0	0	107	6	0	68	0	18	29	205
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	0	145
Lane Group Flow (vph)	84	186	0	0	107	1	0	68	0	0	47	60
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4!		4!	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	4.0	15.5			7.5	7.5		9.8			10.0	9.8
Effective Green, g (s)	4.0	15.5			7.5	7.5		9.8			10.0	9.8
Actuated g/C Ratio	0.12	0.46			0.22	0.22		0.29			0.30	0.29
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	210	857			415	352		596			608	460
v/s Ratio Prot	c0.05	c0.10			0.06			0.03			0.02	
v/s Ratio Perm						0.00					0.00	c0.04
v/c Ratio	0.40	0.22			0.26	0.00		0.11			0.08	0.13
Uniform Delay, d1	13.7	5.5			10.8	10.2		8.8			8.5	8.8
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.3	0.2			0.6	0.0		0.0			0.1	0.0
Delay (s)	15.0	5.7			11.4	10.2		8.8			8.6	8.9
Level of Service	B	A			B	B		A			A	A
Approach Delay (s)		8.6			11.4			8.8			8.8	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	33.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: Van Ness Ave & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	102	43	95	455	54	34	53	33	6	28	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1833		1770	1756		1770	1762	
Flt Permitted	0.33	1.00	1.00	0.67	1.00		0.72	1.00		0.68	1.00	
Satd. Flow (perm)	623	1863	1583	1253	1833		1332	1756		1269	1762	
Peak-hour factor, PHF	0.77	0.77	0.77	0.89	0.89	0.89	0.73	0.73	0.73	0.69	0.69	0.69
Adj. Flow (vph)	6	132	56	107	511	61	47	73	45	9	41	23
RTOR Reduction (vph)	0	0	26	0	6	0	0	31	0	0	16	0
Lane Group Flow (vph)	6	132	30	107	566	0	47	87	0	9	48	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	28.1	28.1	28.1	28.1	28.1		16.0	16.0		16.0	16.0	
Effective Green, g (s)	28.1	28.1	28.1	28.1	28.1		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54		0.30	0.30		0.30	0.30	
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	333	997	847	671	981		406	535		387	537	
v/s Ratio Prot		0.07			c0.31			c0.05			0.03	
v/s Ratio Perm	0.01		0.02	0.09			0.04			0.01		
v/c Ratio	0.02	0.13	0.04	0.16	0.58		0.12	0.16		0.02	0.09	
Uniform Delay, d1	5.7	6.1	5.8	6.2	8.2		13.2	13.3		12.8	13.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.0	0.0	0.0	0.5		0.0	0.1		0.0	0.0	
Delay (s)	5.7	6.1	5.8	6.2	8.7		13.2	13.4		12.8	13.1	
Level of Service	A	A	A	A	A		B	B		B	B	
Approach Delay (s)		6.0			8.3			13.3			13.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	9	197	51	68	300	22	77	39	96	20	60	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1843		1770	1664		1770	1756	
Flt Permitted	0.48	1.00	1.00	0.62	1.00		0.67	1.00		0.66	1.00	
Satd. Flow (perm)	895	1863	1583	1161	1843		1252	1664		1221	1756	
Peak-hour factor, PHF	0.91	0.91	0.91	0.86	0.86	0.86	0.84	0.84	0.84	0.73	0.73	0.73
Adj. Flow (vph)	10	216	56	79	349	26	92	46	114	27	82	51
RTOR Reduction (vph)	0	0	31	0	5	0	0	73	0	0	32	0
Lane Group Flow (vph)	10	216	25	79	370	0	92	87	0	27	101	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	17.4	17.4	17.4	17.4	17.4		14.7	14.7		14.7	14.7	
Effective Green, g (s)	17.4	17.4	17.4	17.4	17.4		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.43		0.36	0.36		0.36	0.36	
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	385	800	680	499	792		454	604		443	637	
v/s Ratio Prot		0.12			c0.20			0.05			0.06	
v/s Ratio Perm	0.01		0.02	0.07			c0.07			0.02		
v/c Ratio	0.03	0.27	0.04	0.16	0.47		0.20	0.14		0.06	0.16	
Uniform Delay, d1	6.7	7.5	6.7	7.1	8.2		8.9	8.7		8.4	8.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1	0.0	0.1	0.2		0.1	0.0		0.0	0.0	
Delay (s)	6.7	7.5	6.7	7.1	8.4		9.0	8.7		8.4	8.8	
Level of Service	A	A	A	A	A		A	A		A	A	
Approach Delay (s)		7.3			8.2			8.8			8.7	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	157	46	0	0	0	0	50	18	6	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5						4.5		4.5	4.5	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frt		0.97						0.96		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		4901						1797		1770	1863	
Flt Permitted		0.99						1.00		0.70	1.00	
Satd. Flow (perm)		4901						1797		1295	1863	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.71	0.71	0.71	0.90	0.90	0.90
Adj. Flow (vph)	47	204	60	0	0	0	0	70	25	7	41	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	271	0	0	0	0	0	79	0	7	41	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		9.7						9.7		9.7	9.7	
Effective Green, g (s)		9.7						9.7		9.7	9.7	
Actuated g/C Ratio		0.34						0.34		0.34	0.34	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		0.2						0.2		0.2	0.2	
Lane Grp Cap (vph)		1674						614		442	636	
v/s Ratio Prot		c0.06						c0.04			0.02	
v/s Ratio Perm										0.01		
v/c Ratio		0.16						0.13		0.02	0.06	
Uniform Delay, d1		6.5						6.4		6.2	6.3	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.0						0.0		0.0	0.0	
Delay (s)		6.5						6.5		6.2	6.3	
Level of Service		A						A		A	A	
Approach Delay (s)		6.5			0.0			6.5			6.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	28.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	18	390	23	0	0	0	0	53	92	38	59	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5						4.5		4.5	4.5	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frt		0.99						0.91		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		5035						1704		1770	1863	
Flt Permitted		1.00						1.00		0.63	1.00	
Satd. Flow (perm)		5035						1704		1182	1863	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.74	0.74	0.74	0.71	0.71	0.71
Adj. Flow (vph)	21	464	27	0	0	0	0	72	124	54	83	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	76	0	0	0	0
Lane Group Flow (vph)	0	500	0	0	0	0	0	120	0	54	83	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		15.4						15.4		15.4	15.4	
Effective Green, g (s)		15.4						15.4		15.4	15.4	
Actuated g/C Ratio		0.39						0.39		0.39	0.39	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		0.2						0.2		0.2	0.2	
Lane Grp Cap (vph)		1948						659		457	721	
v/s Ratio Prot		c0.10						c0.07			0.04	
v/s Ratio Perm										0.05		
v/c Ratio		0.26						0.18		0.12	0.12	
Uniform Delay, d1		8.3						8.0		7.8	7.8	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.0						0.0		0.0	0.0	
Delay (s)		8.3						8.1		7.9	7.9	
Level of Service		A						A		A	A	
Approach Delay (s)		8.3			0.0			8.1			7.9	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	27	203	17	63	19	0	0	5	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.76	0.76	0.76	0.45	0.45	0.45
Hourly flow rate (vph)	0	0	0	35	260	22	83	25	0	0	11	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	282			0			214	351	0	353	340	141
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	282			0			214	351	0	353	340	141
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			88	96	100	100	98	99
cM capacity (veh/h)	1277			1622			695	560	1084	549	568	881

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	165	152	83	25	20
Volume Left	35	0	83	0	0
Volume Right	0	22	0	0	9
cSH	1622	1700	695	560	674
Volume to Capacity	0.02	0.09	0.12	0.04	0.03
Queue Length 95th (ft)	2	0	10	3	2
Control Delay (s)	1.7	0.0	10.9	11.7	10.5
Lane LOS	A		B	B	B
Approach Delay (s)	0.9		11.1		10.5
Approach LOS			B		B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	26	210	7	14	8	0	0	8	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.79	0.79	0.79	0.42	0.42	0.42
Hourly flow rate (vph)	0	0	0	32	256	9	18	10	0	0	19	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	265			0			218	328	0	329	324	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			0			218	328	0	329	324	132
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	98	100	100	97	98
cM capacity (veh/h)	1296			1622			678	578	1084	584	581	893

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	160	137	18	10	36
Volume Left	32	0	18	0	0
Volume Right	0	9	0	0	17
cSH	1622	1700	678	578	694
Volume to Capacity	0.02	0.08	0.03	0.02	0.05
Queue Length 95th (ft)	1	0	2	1	4
Control Delay (s)	1.6	0.0	10.4	11.3	10.5
Lane LOS	A		B	B	B
Approach Delay (s)	0.8		10.8		10.5
Approach LOS			B		B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	98	8	100	57	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.89	
Flt Protected	1.00			0.97	0.99	
Satd. Flow (prot)	3500			3430	1637	
Flt Permitted	1.00			0.95	0.99	
Satd. Flow (perm)	3500			3380	1637	
Peak-hour factor, PHF	0.78	0.78	0.84	0.84	0.88	0.88
Adj. Flow (vph)	126	10	119	68	2	11
RTOR Reduction (vph)	8	0	0	0	11	0
Lane Group Flow (vph)	128	0	0	187	3	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	3.0			3.0	0.6	
Effective Green, g (s)	3.0			3.0	0.6	
Actuated g/C Ratio	0.23			0.23	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	795			768	74	
v/s Ratio Prot	0.04					
v/s Ratio Perm				c0.06	c0.00	
v/c Ratio	0.16			0.24	0.03	
Uniform Delay, d1	4.1			4.2	6.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.1	0.1	
Delay (s)	4.1			4.2	6.1	
Level of Service	A			A	A	
Approach Delay (s)	4.1			4.2	6.1	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	13.2	Sum of lost time (s)	9.6
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	117	15	116	54	23	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.98			1.00	0.93	
Flt Protected	1.00			0.97	0.98	
Satd. Flow (prot)	3479			3423	1696	
Flt Permitted	1.00			0.95	0.98	
Satd. Flow (perm)	3479			3380	1696	
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.72	0.72
Adj. Flow (vph)	134	17	136	64	32	31
RTOR Reduction (vph)	13	0	0	0	30	0
Lane Group Flow (vph)	138	0	0	200	33	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	3.1			3.1	0.6	
Effective Green, g (s)	3.1			3.1	0.6	
Actuated g/C Ratio	0.23			0.23	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	811			788	77	
v/s Ratio Prot	0.04					
v/s Ratio Perm				c0.06	c0.02	
v/c Ratio	0.17			0.25	0.43	
Uniform Delay, d1	4.1			4.2	6.2	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.1	1.4	
Delay (s)	4.1			4.2	7.6	
Level of Service	A			A	A	
Approach Delay (s)	4.1			4.2	7.6	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	13.3	Sum of lost time (s)	9.6
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	171	67	158	179	11	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.86	0.86	0.70	0.70
Hourly flow rate (vph)	216	85	184	208	16	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	537			471		
pX, platoon unblocked						
vC, conflicting volume			301		834	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			301		834	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		95	97
cM capacity (veh/h)			1260		289	780

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	301	392	40
Volume Left	0	184	16
Volume Right	85	0	24
cSH	1700	1260	467
Volume to Capacity	0.18	0.15	0.09
Queue Length 95th (ft)	0	13	7
Control Delay (s)	0.0	4.6	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.6	13.4
Approach LOS			B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	177	16	22	180	38	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.75	0.75	0.74	0.74
Hourly flow rate (vph)	201	18	29	240	51	73
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	537			471		
pX, platoon unblocked						
vC, conflicting volume			219		509	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			219		509	210
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	91
cM capacity (veh/h)			1350		513	830

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	219	269	124
Volume Left	0	29	51
Volume Right	18	0	73
cSH	1700	1350	661
Volume to Capacity	0.13	0.02	0.19
Queue Length 95th (ft)	0	2	17
Control Delay (s)	0.0	1.0	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	1.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	19	44	5	3	84	6	49	76	32	62	61	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.96		1.00	0.90	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1820			1844		1770	1780		1770	1675	
Flt Permitted		0.91			0.99		0.62	1.00		0.67	1.00	
Satd. Flow (perm)		1680			1834		1150	1780		1257	1675	
Peak-hour factor, PHF	0.93	0.93	0.93	0.73	0.73	0.73	0.84	0.84	0.84	0.82	0.82	0.82
Adj. Flow (vph)	20	47	5	4	115	8	58	90	38	76	74	152
RTOR Reduction (vph)	0	4	0	0	4	0	0	14	0	0	66	0
Lane Group Flow (vph)	0	68	0	0	123	0	58	114	0	76	160	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		11.6			11.6		21.1	21.1		21.1	21.1	
Effective Green, g (s)		11.6			11.6		21.1	21.1		21.1	21.1	
Actuated g/C Ratio		0.28			0.28		0.51	0.51		0.51	0.51	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		474			518		590	914		645	860	
v/s Ratio Prot								0.06			c0.10	
v/s Ratio Perm		0.04			c0.07		0.05			0.06		
v/c Ratio		0.14			0.24		0.10	0.13		0.12	0.19	
Uniform Delay, d1		11.0			11.4		5.1	5.2		5.2	5.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.0	0.0		0.0	0.0	
Delay (s)		11.1			11.4		5.2	5.2		5.2	5.4	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		11.1			11.4			5.2			5.4	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	41.1	Sum of lost time (s)	8.4
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
22: E St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	21	74	19	8	84	10	39	71	53	96	140	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.99		1.00	0.94		1.00	0.92	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1805			1831		1770	1743		1770	1706	
Flt Permitted		0.94			0.98		0.49	1.00		0.66	1.00	
Satd. Flow (perm)		1715			1799		906	1743		1230	1706	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	23	80	20	10	100	12	48	87	65	116	169	217
RTOR Reduction (vph)	0	11	0	0	6	0	0	23	0	0	38	0
Lane Group Flow (vph)	0	112	0	0	116	0	48	129	0	116	348	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		17.0			17.0		31.0	31.0		31.0	31.0	
Effective Green, g (s)		17.0			17.0		31.0	31.0		31.0	31.0	
Actuated g/C Ratio		0.30			0.30		0.55	0.55		0.55	0.55	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		517			542		498	958		676	938	
v/s Ratio Prot								0.07			c0.20	
v/s Ratio Perm		c0.07			0.06		0.05			0.09		
v/c Ratio		0.22			0.21		0.10	0.14		0.17	0.37	
Uniform Delay, d1		14.7			14.7		6.0	6.2		6.3	7.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.0	0.0		0.0	0.1	
Delay (s)		14.8			14.8		6.1	6.2		6.4	7.3	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		14.8			14.8			6.2			7.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	154	208	39	32	385	59	71	234	21	67	98	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1818		1770	3469		1770	3496		1770	3182	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1818		1770	3469		1770	3496		1770	3182	
Peak-hour factor, PHF	0.96	0.96	0.96	0.89	0.89	0.89	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	160	217	41	36	433	66	96	316	28	91	132	272
RTOR Reduction (vph)	0	7	0	0	14	0	0	8	0	0	210	0
Lane Group Flow (vph)	160	251	0	36	485	0	96	336	0	91	194	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.7	25.7		2.4	20.4		6.4	15.2		6.3	15.1	
Effective Green, g (s)	7.7	25.7		2.4	20.4		6.4	15.2		6.3	15.1	
Actuated g/C Ratio	0.12	0.39		0.04	0.31		0.10	0.23		0.10	0.23	
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	207	708		64	1072		172	805		169	728	
v/s Ratio Prot	c0.09	0.14		0.02	c0.14		c0.05	c0.10		0.05	0.06	
v/s Ratio Perm												
v/c Ratio	0.77	0.35		0.56	0.45		0.56	0.42		0.54	0.27	
Uniform Delay, d1	28.3	14.3		31.3	18.3		28.5	21.6		28.5	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.0	0.6		6.6	0.6		2.2	0.7		1.7	0.4	
Delay (s)	43.3	14.9		37.9	19.0		30.7	22.4		30.1	21.3	
Level of Service	D	B		D	B		C	C		C	C	
Approach Delay (s)		25.8			20.2			24.2			22.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	147	218	36	38	365	55	47	232	21	51	125	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1823		1770	3470		1770	3496		1770	3227	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1823		1770	3470		1770	3496		1770	3227	
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Adj. Flow (vph)	156	232	38	44	420	63	55	270	24	65	160	228
RTOR Reduction (vph)	0	6	0	0	14	0	0	8	0	0	175	0
Lane Group Flow (vph)	156	264	0	44	469	0	55	286	0	65	213	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.6	23.2		3.6	19.2		3.8	13.8		4.1	14.1	
Effective Green, g (s)	7.6	23.2		3.6	19.2		3.8	13.8		4.1	14.1	
Actuated g/C Ratio	0.12	0.38		0.06	0.31		0.06	0.23		0.07	0.23	
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	220	692		104	1090		110	790		119	745	
v/s Ratio Prot	c0.09	c0.14		0.02	0.14		0.03	c0.08		c0.04	0.07	
v/s Ratio Perm												
v/c Ratio	0.71	0.38		0.42	0.43		0.50	0.36		0.55	0.29	
Uniform Delay, d1	25.7	13.7		27.7	16.6		27.7	19.9		27.6	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.3	0.7		1.0	0.6		1.3	0.6		2.7	0.4	
Delay (s)	33.9	14.5		28.8	17.2		29.0	20.5		30.3	19.8	
Level of Service	C	B		C	B		C	C		C	B	
Approach Delay (s)		21.6			18.2			21.9			21.3	
Approach LOS		C			B			C			C	

Intersection Summary

HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	16.4
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	129	183	180	0	0	0	0	303	58	77	627	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		4982	1583					3454		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.51	1.00	
Satd. Flow (perm)		4982	1583					3454		944	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91
Adj. Flow (vph)	152	215	212	0	0	0	0	352	67	85	689	0
RTOR Reduction (vph)	0	0	108	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	367	104	0	0	0	0	390	0	85	689	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.0	19.0					26.0		26.0	26.0	
Effective Green, g (s)		19.0	19.0					26.0		26.0	26.0	
Actuated g/C Ratio		0.35	0.35					0.48		0.48	0.48	
Clearance Time (s)		4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1753	557					1663		455	1704	
v/s Ratio Prot		c0.07						0.11			c0.19	
v/s Ratio Perm			0.07							0.09		
v/c Ratio		0.21	0.19					0.23		0.19	0.40	
Uniform Delay, d1		12.2	12.1					8.2		8.0	9.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.1					0.0		0.1	0.1	
Delay (s)		12.3	12.2					8.2		8.0	9.1	
Level of Service		B	B					A		A	A	
Approach Delay (s)		12.2			0.0			8.2			9.0	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	154	265	104	0	0	0	0	494	41	66	424	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		4994	1583					3498		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.39	1.00	
Satd. Flow (perm)		4994	1583					3498		724	3539	
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.86	0.86	0.86	0.95	0.95	0.95
Adj. Flow (vph)	261	449	176	0	0	0	0	574	48	69	446	0
RTOR Reduction (vph)	0	0	114	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	710	62	0	0	0	0	611	0	69	446	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.0	19.0					26.0		26.0	26.0	
Effective Green, g (s)		19.0	19.0					26.0		26.0	26.0	
Actuated g/C Ratio		0.35	0.35					0.48		0.48	0.48	
Clearance Time (s)		4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1757	557					1684		349	1704	
v/s Ratio Prot		c0.14						c0.17			0.13	
v/s Ratio Perm			0.04							0.10		
v/c Ratio		0.40	0.11					0.36		0.20	0.26	
Uniform Delay, d1		13.2	11.8					8.8		8.0	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0					0.0		0.1	0.0	
Delay (s)		13.3	11.8					8.8		8.1	8.3	
Level of Service		B	B					A		A	A	
Approach Delay (s)		13.0			0.0			8.8			8.3	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	148	43	41	236	0	0	1032	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.19	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	358	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	44	180	52	49	284	0	0	1290	129
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	55
Lane Group Flow (vph)	0	0	0	44	180	10	49	284	0	0	1290	74
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				7.1	7.1	7.1	20.8	20.8			20.8	20.8
Effective Green, g (s)				7.1	7.1	7.1	20.8	20.8			20.8	20.8
Actuated g/C Ratio				0.20	0.20	0.20	0.57	0.57			0.57	0.57
Clearance Time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Vehicle Extension (s)				3.0	3.0	3.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				346	364	310	205	2028			2028	907
v/s Ratio Prot				0.02	c0.10			0.08			c0.36	
v/s Ratio Perm						0.01	0.14					0.05
v/c Ratio				0.13	0.49	0.03	0.24	0.14			0.64	0.08
Uniform Delay, d1				12.0	13.0	11.8	3.8	3.6			5.2	3.5
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.2	1.1	0.0	1.3	0.1			0.9	0.1
Delay (s)				12.2	14.1	11.9	5.1	3.7			6.1	3.6
Level of Service				B	B	B	A	A			A	A
Approach Delay (s)		0.0			13.4			3.9			5.9	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	40	125	95	14	988	0	0	436	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.45	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	836	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	48	151	114	18	1283	0	0	545	38
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	0	0	0	16
Lane Group Flow (vph)	0	0	0	48	151	87	18	1283	0	0	545	22
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				6.8	6.8	6.8	20.8	20.8			20.8	20.8
Effective Green, g (s)				6.8	6.8	6.8	20.8	20.8			20.8	20.8
Actuated g/C Ratio				0.19	0.19	0.19	0.58	0.58			0.58	0.58
Clearance Time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Vehicle Extension (s)				3.0	3.0	3.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				334	352	299	483	2045			2045	915
v/s Ratio Prot				0.03	c0.08			c0.36			0.15	
v/s Ratio Perm						0.06	0.02					0.01
v/c Ratio				0.14	0.43	0.29	0.04	0.63			0.27	0.02
Uniform Delay, d1				12.2	12.9	12.5	3.3	5.0			3.8	3.3
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.2	0.8	0.5	0.1	0.9			0.1	0.0
Delay (s)				12.4	13.7	13.1	3.3	5.9			3.9	3.3
Level of Service				B	B	B	A	A			A	A
Approach Delay (s)		0.0			13.3			5.9			3.9	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	36.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	37	156	43	63	210	81	31	221	20	90	1054	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3495		1770	3490	
Flt Permitted	0.53	1.00	1.00	0.62	1.00	1.00	0.13	1.00		0.59	1.00	
Satd. Flow (perm)	993	1863	1583	1147	1863	1583	247	3495		1096	3490	
Peak-hour factor, PHF	0.76	0.76	0.76	0.80	0.80	0.80	0.91	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	49	205	57	79	262	101	34	243	22	110	1285	130
RTOR Reduction (vph)	0	0	25	0	0	68	0	11	0	0	12	0
Lane Group Flow (vph)	49	205	32	79	262	33	34	254	0	110	1403	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	325	610	519	376	610	519	129	1820		571	1817	
v/s Ratio Prot		0.11			c0.14			0.07			c0.40	
v/s Ratio Perm	0.05		0.02	0.07		0.02	0.14			0.10		
v/c Ratio	0.15	0.34	0.06	0.21	0.43	0.06	0.26	0.14		0.19	0.77	
Uniform Delay, d1	13.8	14.7	13.4	14.1	15.3	13.4	7.7	7.2		7.4	11.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.1	0.2	0.0	0.4	0.0		0.1	1.9	
Delay (s)	13.9	14.9	13.4	14.2	15.4	13.4	8.1	7.2		7.5	13.0	
Level of Service	B	B	B	B	B	B	A	A		A	B	
Approach Delay (s)		14.4			14.7			7.3			12.6	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	113	225	33	47	193	103	32	942	63	60	361	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3506		1770	3479	
Flt Permitted	0.50	1.00	1.00	0.51	1.00	1.00	0.47	1.00		0.13	1.00	
Satd. Flow (perm)	925	1863	1583	951	1863	1583	874	3506		247	3479	
Peak-hour factor, PHF	0.81	0.81	0.81	0.67	0.67	0.67	0.78	0.78	0.78	0.84	0.84	0.84
Adj. Flow (vph)	140	278	41	70	288	154	41	1208	81	71	430	55
RTOR Reduction (vph)	0	0	28	0	0	31	0	8	0	0	16	0
Lane Group Flow (vph)	140	278	13	70	288	123	41	1281	0	71	469	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	303	610	519	312	610	519	455	1826		129	1811	
v/s Ratio Prot		0.15			c0.15			c0.37			0.13	
v/s Ratio Perm	0.15		0.01	0.07		0.08	0.05			0.29		
v/c Ratio	0.46	0.46	0.03	0.22	0.47	0.24	0.09	0.70		0.55	0.26	
Uniform Delay, d1	15.5	15.4	13.2	14.2	15.5	14.2	7.0	10.5		9.3	7.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2	0.0	0.1	0.2	0.1	0.0	1.0		2.9	0.0	
Delay (s)	15.9	15.6	13.2	14.3	15.7	14.3	7.0	11.5		12.2	7.7	
Level of Service	B	B	B	B	B	B	A	B		B	A	
Approach Delay (s)		15.5			15.1			11.4			8.3	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	79	38	0	0	0	21	307	42	169	1217	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.98		1.00	0.98	
Flt Protected		0.99	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1837	1583				1770	3475		1770	3478	
Flt Permitted		0.99	1.00				0.13	1.00		0.53	1.00	
Satd. Flow (perm)		1837	1583				243	3475		988	3478	
Peak-hour factor, PHF	0.74	0.74	0.74	0.92	0.92	0.92	0.94	0.94	0.94	0.87	0.87	0.87
Adj. Flow (vph)	41	107	51	0	0	0	22	327	45	194	1399	184
RTOR Reduction (vph)	0	0	16	0	0	0	0	10	0	0	10	0
Lane Group Flow (vph)	0	148	35	0	0	0	22	362	0	194	1573	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		6.3	6.3				30.6	30.6		30.6	30.6	
Effective Green, g (s)		6.3	6.3				30.6	30.6		30.6	30.6	
Actuated g/C Ratio		0.14	0.14				0.66	0.66		0.66	0.66	
Clearance Time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2				4.1	4.1		4.1	4.1	
Lane Grp Cap (vph)		251	216				161	2307		656	2309	
v/s Ratio Prot		c0.08						0.10			c0.45	
v/s Ratio Perm			0.02				0.09			0.20		
v/c Ratio		0.59	0.16				0.14	0.16		0.30	0.68	
Uniform Delay, d1		18.7	17.6				2.9	2.9		3.2	4.8	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.3	0.1				0.6	0.0		0.4	0.9	
Delay (s)		21.0	17.7				3.4	3.0		3.6	5.7	
Level of Service		C	B				A	A		A	A	
Approach Delay (s)		20.1			0.0			3.0			5.5	
Approach LOS		C			A			A			A	

Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	75	136	20	0	0	0	23	965	83	140	564	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1830	1583				1770	3497		1770	3484	
Flt Permitted		0.98	1.00				0.39	1.00		0.13	1.00	
Satd. Flow (perm)		1830	1583				735	3497		244	3484	
Peak-hour factor, PHF	0.70	0.70	0.70	0.92	0.92	0.92	0.72	0.72	0.72	0.95	0.95	0.95
Adj. Flow (vph)	107	194	29	0	0	0	32	1340	115	147	594	69
RTOR Reduction (vph)	0	0	20	0	0	0	0	7	0	0	11	0
Lane Group Flow (vph)	0	301	9	0	0	0	32	1448	0	147	652	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		11.5	11.5				30.5	30.5		30.5	30.5	
Effective Green, g (s)		11.5	11.5				30.5	30.5		30.5	30.5	
Actuated g/C Ratio		0.22	0.22				0.60	0.60		0.60	0.60	
Clearance Time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2				4.1	4.1		4.1	4.1	
Lane Grp Cap (vph)		411	356				438	2083		145	2075	
v/s Ratio Prot		c0.16						0.41			0.19	
v/s Ratio Perm			0.01				0.04			c0.60		
v/c Ratio		0.73	0.02				0.07	0.70		1.01	0.31	
Uniform Delay, d1		18.4	15.5				4.4	7.1		10.4	5.1	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7	0.0				0.1	1.1		78.4	0.1	
Delay (s)		24.1	15.5				4.5	8.3		88.8	5.3	
Level of Service		C	B				A	A		F	A	
Approach Delay (s)		23.4			0.0			8.2			20.4	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	903	0	337	623	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.85	0.85	0.89	0.89	0.77	0.77
Adj. Flow (vph)	0	1062	0	379	809	0
RTOR Reduction (vph)	0	547	0	0	0	0
Lane Group Flow (vph)	0	515	0	379	809	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		18.2		11.1	17.7	
Effective Green, g (s)		18.2		11.1	17.7	
Actuated g/C Ratio		0.49		0.30	0.47	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		1353		1048	1670	
v/s Ratio Prot				c0.11	c0.23	
v/s Ratio Perm		0.18				
v/c Ratio		0.38		0.36	0.48	
Uniform Delay, d1		6.1		10.4	6.8	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.3	
Delay (s)		6.2		10.6	7.1	
Level of Service		A		B	A	
Approach Delay (s)	6.2			10.6	7.1	
Approach LOS	A			B	A	

Intersection Summary

HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	8.7
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	313	0	1041	467	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.91	0.91	0.72	0.72	0.92	0.92
Adj. Flow (vph)	0	344	0	1446	508	0
RTOR Reduction (vph)	0	234	0	0	0	0
Lane Group Flow (vph)	0	110	0	1446	508	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		13.8		21.0	13.3	
Effective Green, g (s)		13.8		21.0	13.3	
Actuated g/C Ratio		0.32		0.49	0.31	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		894		1728	1095	
v/s Ratio Prot				c0.41	c0.14	
v/s Ratio Perm		0.04				
v/c Ratio		0.12		0.84	0.46	
Uniform Delay, d1		10.3		9.5	12.0	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.0		3.7	0.4	
Delay (s)		10.3		13.2	12.4	
Level of Service		B		B	B	
Approach Delay (s)	10.3			13.2	12.4	
Approach LOS	B			B	B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	500	5	0	289	0	0	0	0	434	920	819
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3534			3539					1610	3383	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3534			3539					1610	3383	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.72	0.72	0.72	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	581	6	0	401	0	0	0	0	477	1011	900
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	163
Lane Group Flow (vph)	0	585	0	0	401	0	0	0	0	429	1059	737
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		11.7			11.7					16.1	16.1	16.1
Effective Green, g (s)		11.7			11.7					16.1	16.1	16.1
Actuated g/C Ratio		0.33			0.33					0.45	0.45	0.45
Clearance Time (s)		4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1155			1157					724	1521	712
v/s Ratio Prot		c0.17			0.11							
v/s Ratio Perm										0.27	0.31	c0.47
v/c Ratio		0.51			0.35					0.59	0.70	1.03
Uniform Delay, d1		9.7			9.1					7.4	7.9	9.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.4			0.2					1.3	1.4	42.9
Delay (s)		10.1			9.3					8.7	9.3	52.8
Level of Service		B			A					A	A	D
Approach Delay (s)		10.1			9.3			0.0			25.6	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
32: E Divisadero St & 41 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1004	9	0	254	0	0	0	0	543	308	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		3535			3539					1610	3314	1583
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		3535			3539					1610	3314	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	1128	10	0	262	0	0	0	0	560	318	319
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	200
Lane Group Flow (vph)	0	1136	0	0	262	0	0	0	0	286	592	119
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		15.5			15.5					14.0	14.0	14.0
Effective Green, g (s)		15.5			15.5					14.0	14.0	14.0
Actuated g/C Ratio		0.41			0.41					0.37	0.37	0.37
Clearance Time (s)		4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1461			1463					601	1237	591
v/s Ratio Prot		c0.32			0.07							
v/s Ratio Perm										0.18	0.18	0.08
v/c Ratio		0.78			0.18					0.48	0.48	0.20
Uniform Delay, d1		9.5			7.0					9.0	9.0	8.0
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		2.7			0.1					0.6	0.3	0.2
Delay (s)		12.2			7.0					9.6	9.3	8.1
Level of Service		B			A					A	A	A
Approach Delay (s)		12.2			7.0			0.0			9.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	133	186	0	413	212	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.1	4.1		4.1	4.1	4.1
Lane Util. Factor	0.95	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		3539	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		3539	1770	1583
Peak-hour factor, PHF	0.83	0.83	0.75	0.75	0.82	0.82
Adj. Flow (vph)	160	224	0	551	259	206
RTOR Reduction (vph)	0	147	0	0	0	99
Lane Group Flow (vph)	160	77	0	551	259	107
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	20.3	20.3		20.3	30.8	30.8
Effective Green, g (s)	20.3	20.3		20.3	30.8	30.8
Actuated g/C Ratio	0.34	0.34		0.34	0.52	0.52
Clearance Time (s)	4.1	4.1		4.1	4.1	4.1
Vehicle Extension (s)	3.0	3.0		3.0	0.2	0.2
Lane Grp Cap (vph)	1211	542		1211	919	822
v/s Ratio Prot	0.05			c0.16	c0.15	
v/s Ratio Perm		0.05				0.07
v/c Ratio	0.13	0.14		0.45	0.28	0.13
Uniform Delay, d1	13.4	13.5		15.2	8.0	7.3
Progression Factor	1.00	1.00		0.63	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.2	0.1	0.0
Delay (s)	13.5	13.6		9.8	8.1	7.4
Level of Service	B	B		A	A	A
Approach Delay (s)	13.5			9.8	7.8	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	8.2
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑	↰	↱
Volume (vph)	374	730	0	341	125	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.1	4.1		4.1	4.1	4.1
Lane Util. Factor	0.95	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		3539	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		3539	1770	1583
Peak-hour factor, PHF	0.73	0.73	0.92	0.92	0.95	0.95
Adj. Flow (vph)	512	1000	0	371	132	294
RTOR Reduction (vph)	0	622	0	0	0	59
Lane Group Flow (vph)	512	378	0	371	132	235
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	21.2	21.2		21.2	26.7	26.7
Effective Green, g (s)	21.2	21.2		21.2	26.7	26.7
Actuated g/C Ratio	0.38	0.38		0.38	0.48	0.48
Clearance Time (s)	4.1	4.1		4.1	4.1	4.1
Vehicle Extension (s)	3.0	3.0		3.0	0.2	0.2
Lane Grp Cap (vph)	1337	598		1337	842	753
v/s Ratio Prot	0.14			0.10	0.07	
v/s Ratio Perm		c0.24				c0.15
v/c Ratio	0.38	0.63		0.28	0.16	0.31
Uniform Delay, d1	12.7	14.3		12.1	8.3	9.0
Progression Factor	1.00	1.00		0.59	1.00	1.00
Incremental Delay, d2	0.2	2.2		0.1	0.0	0.1
Delay (s)	12.9	16.4		7.3	8.4	9.1
Level of Service	B	B		A	A	A
Approach Delay (s)	15.2			7.3	8.9	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	8.2
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	394	522	332	531	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.1	4.1	4.1		
Lane Util. Factor	1.00	0.95	0.95	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1947	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1947	3893	3893	1742		
Peak-hour factor, PHF	0.84	0.84	0.79	0.79	0.92	0.92
Adj. Flow (vph)	469	621	420	672	0	0
RTOR Reduction (vph)	0	0	0	437	0	0
Lane Group Flow (vph)	469	621	420	235	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	6.4	30.8	20.7	20.7		
Effective Green, g (s)	6.4	30.8	20.7	20.7		
Actuated g/C Ratio	0.11	0.52	0.35	0.35		
Clearance Time (s)	3.7	4.1	4.1	4.1		
Vehicle Extension (s)	8.0	0.2	4.1	4.1		
Lane Grp Cap (vph)	210	2022	1359	608		
v/s Ratio Prot	c0.24	0.16	0.11			
v/s Ratio Perm				c0.13		
v/c Ratio	2.23	0.31	0.31	0.39		
Uniform Delay, d1	26.4	8.1	14.1	14.5		
Progression Factor	1.00	1.00	1.19	3.23		
Incremental Delay, d2	570.1	0.0	0.2	0.5		
Delay (s)	596.6	8.2	17.0	47.4		
Level of Service	F	A	B	D		
Approach Delay (s)		261.3	35.7		0.0	
Approach LOS		F	D		A	

Intersection Summary

HCM Average Control Delay	148.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	32.2
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	690	757	263	520	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.1	4.1	4.1		
Lane Util. Factor	1.00	0.95	0.95	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1947	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1947	3893	3893	1742		
Peak-hour factor, PHF	0.86	0.86	0.89	0.89	0.92	0.92
Adj. Flow (vph)	802	880	296	584	0	0
RTOR Reduction (vph)	0	0	0	411	0	0
Lane Group Flow (vph)	802	880	296	173	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	6.4	26.7	16.6	16.6		
Effective Green, g (s)	6.4	26.7	16.6	16.6		
Actuated g/C Ratio	0.11	0.48	0.30	0.30		
Clearance Time (s)	3.7	4.1	4.1	4.1		
Vehicle Extension (s)	8.0	0.2	4.1	4.1		
Lane Grp Cap (vph)	222	1853	1152	515		
v/s Ratio Prot	c0.41	c0.23	0.08			
v/s Ratio Perm				0.10		
v/c Ratio	3.61	0.47	0.26	0.34		
Uniform Delay, d1	24.9	10.0	15.1	15.4		
Progression Factor	1.00	1.00	1.17	2.81		
Incremental Delay, d2	1186.8	0.1	0.2	0.5		
Delay (s)	1211.6	10.0	17.8	43.9		
Level of Service	F	B	B	D		
Approach Delay (s)		583.0	35.1		0.0	
Approach LOS		F	D		A	

Intersection Summary

HCM Average Control Delay	394.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	29.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	596	88	93	712	52	388	274	27	186	283	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3503		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3503		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.85	0.85	0.85	0.69	0.69	0.69
Adj. Flow (vph)	112	641	95	101	774	57	456	322	32	270	410	239
RTOR Reduction (vph)	0	0	60	0	8	0	0	0	26	0	0	214
Lane Group Flow (vph)	112	641	35	101	823	0	456	322	6	270	410	25
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	5.2	23.0	23.0	5.1	22.6		11.1	11.8	11.8	6.1	6.5	6.5
Effective Green, g (s)	5.2	23.0	23.0	5.1	22.6		11.1	11.8	11.8	6.1	6.5	6.5
Actuated g/C Ratio	0.08	0.36	0.36	0.08	0.36		0.18	0.19	0.19	0.10	0.10	0.10
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.2		2.0	5.0	5.0	2.0	5.2	5.2
Lane Grp Cap (vph)	282	1288	576	277	1253		603	661	296	331	364	163
v/s Ratio Prot	c0.03	0.18		0.03	c0.24		c0.13	0.09		0.08	c0.12	
v/s Ratio Perm			0.02						0.00			0.02
v/c Ratio	0.40	0.50	0.06	0.36	0.66		0.76	0.49	0.02	0.82	1.13	0.15
Uniform Delay, d1	27.5	15.6	13.1	27.5	17.0		24.8	23.0	21.0	28.0	28.4	25.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	0.1	0.3	1.8		4.8	1.2	0.1	13.6	86.0	1.0
Delay (s)	27.8	16.2	13.2	27.8	18.8		29.6	24.2	21.0	41.6	114.4	26.8
Level of Service	C	B	B	C	B		C	C	C	D	F	C
Approach Delay (s)		17.4			19.8			27.1			70.2	
Approach LOS		B			B			C			E	

Intersection Summary

HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	17.8
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
34: Tulare St & First Steet

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	853	174	101	578	84	347	413	48	237	325	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3472		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3472		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	422	992	202	111	635	92	413	492	57	276	378	94
RTOR Reduction (vph)	0	0	91	0	17	0	0	0	46	0	0	84
Lane Group Flow (vph)	422	992	111	111	710	0	413	492	11	276	378	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	8.0	25.8	25.8	5.4	22.9		10.9	12.4	12.4	6.0	7.2	7.2
Effective Green, g (s)	8.0	25.8	25.8	5.4	22.9		10.9	12.4	12.4	6.0	7.2	7.2
Actuated g/C Ratio	0.12	0.39	0.39	0.08	0.34		0.16	0.19	0.19	0.09	0.11	0.11
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.2		2.0	5.0	5.0	2.0	5.2	5.2
Lane Grp Cap (vph)	411	1367	611	278	1190		560	657	294	308	381	171
v/s Ratio Prot	c0.12	c0.28		0.03	0.20		c0.12	c0.14		0.08	0.11	
v/s Ratio Perm			0.07						0.01			0.01
v/c Ratio	1.03	0.73	0.18	0.40	0.60		0.74	0.75	0.04	0.90	0.99	0.06
Uniform Delay, d1	29.4	17.5	13.5	29.2	18.1		26.6	25.7	22.3	30.1	29.8	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.4	2.4	0.3	0.3	1.3		4.4	5.6	0.1	26.0	44.0	0.3
Delay (s)	80.8	19.9	13.8	29.5	19.4		30.9	31.3	22.4	56.1	73.7	27.1
Level of Service	F	B	B	C	B		C	C	C	E	E	C
Approach Delay (s)		35.0			20.7			30.6			61.4	
Approach LOS		D			C			C			E	

Intersection Summary

HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	9	149	18	26	145	90	6	28	9	183	11	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5			4.5			4.5			4.5	
Lane Util. Factor	1.00	0.95			1.00			1.00			1.00	
Frt	1.00	0.98			0.95			0.97			0.97	
Flt Protected	0.95	1.00			1.00			0.99			0.96	
Satd. Flow (prot)	1770	3482			1767			1796			1746	
Flt Permitted	0.59	1.00			0.96			0.95			0.74	
Satd. Flow (perm)	1096	3482			1712			1721			1346	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.77	0.77	0.77	0.78	0.78	0.78
Adj. Flow (vph)	10	166	20	28	158	98	8	36	12	235	14	63
RTOR Reduction (vph)	0	10	0	0	28	0	0	8	0	0	13	0
Lane Group Flow (vph)	10	176	0	0	256	0	0	48	0	0	299	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	29.0	29.0			29.0			21.5			21.5	
Effective Green, g (s)	29.0	29.0			29.0			21.5			21.5	
Actuated g/C Ratio	0.49	0.49			0.49			0.36			0.36	
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	
Vehicle Extension (s)	0.2	0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)	534	1697			834			622			486	
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.01				c0.15			0.03			c0.22	
v/c Ratio	0.02	0.10			0.31			0.08			0.62	
Uniform Delay, d1	7.9	8.2			9.2			12.5			15.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0			0.1			0.0			1.6	
Delay (s)	7.9	8.2			9.3			12.5			17.2	
Level of Service	A	A			A			B			B	
Approach Delay (s)		8.2			9.3			12.5			17.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	34	152	16	21	288	182	50	75	22	71	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5			4.5			4.5			4.5	
Lane Util. Factor	1.00	0.95			1.00			1.00			1.00	
Frt	1.00	0.99			0.95			0.98			0.95	
Flt Protected	0.95	1.00			1.00			0.98			0.97	
Satd. Flow (prot)	1770	3488			1766			1794			1714	
Flt Permitted	0.42	1.00			0.99			0.85			0.78	
Satd. Flow (perm)	791	3488			1743			1558			1377	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.85	0.85	0.85	0.78	0.78	0.78
Adj. Flow (vph)	40	179	19	24	335	212	59	88	26	91	6	65
RTOR Reduction (vph)	0	8	0	0	27	0	0	10	0	0	39	0
Lane Group Flow (vph)	40	190	0	0	544	0	0	163	0	0	123	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	30.5	30.5			30.5			15.3			15.3	
Effective Green, g (s)	30.5	30.5			30.5			15.3			15.3	
Actuated g/C Ratio	0.56	0.56			0.56			0.28			0.28	
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	
Vehicle Extension (s)	0.2	0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)	440	1941			970			435			384	
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.05				c0.31			c0.10			0.09	
v/c Ratio	0.09	0.10			0.56			0.37			0.32	
Uniform Delay, d1	5.7	5.7			7.8			15.9			15.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0			0.4			0.2			0.2	
Delay (s)	5.7	5.7			8.3			16.1			15.8	
Level of Service	A	A			A			B			B	
Approach Delay (s)		5.7			8.3			16.1			15.8	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	55	21	10	40	25	39	11	399	31	93	441	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1694		1770	3501		1770	3482	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.44	1.00		0.43	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1694		817	3501		807	3482	
Peak-hour factor, PHF	0.83	0.83	0.83	0.84	0.84	0.84	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	66	25	12	48	30	46	15	539	42	107	507	61
RTOR Reduction (vph)	0	0	11	0	42	0	0	8	0	0	14	0
Lane Group Flow (vph)	66	25	2	48	34	0	15	573	0	107	554	0
Turn Type	Prot		Perm	Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	3.1	5.0	5.0	2.0	3.9		20.6	20.6		20.6	20.6	
Effective Green, g (s)	3.1	5.0	5.0	2.0	3.9		20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.08	0.12	0.12	0.05	0.10		0.52	0.52		0.52	0.52	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	137	233	198	89	165		421	1803		416	1793	
v/s Ratio Prot	c0.04	0.01		0.03	c0.02			c0.16			0.16	
v/s Ratio Perm			0.00				0.02			0.13		
v/c Ratio	0.48	0.11	0.01	0.54	0.21		0.04	0.32		0.26	0.31	
Uniform Delay, d1	17.7	15.5	15.3	18.6	16.6		4.8	5.6		5.4	5.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.1	0.0	3.1	0.2		0.1	0.3		0.9	0.3	
Delay (s)	18.7	15.6	15.3	21.7	16.9		4.9	5.9		6.3	5.9	
Level of Service	B	B	B	C	B		A	A		A	A	
Approach Delay (s)		17.5			18.7			5.9			5.9	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	141	99	25	98	90	77	14	439	50	104	418	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1733		1770	3485		1770	3429	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1733		773	3485		731	3429	
Peak-hour factor, PHF	0.72	0.72	0.72	0.87	0.87	0.87	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	196	138	35	113	103	89	17	535	61	111	445	116
RTOR Reduction (vph)	0	0	28	0	57	0	0	15	0	0	41	0
Lane Group Flow (vph)	196	138	7	113	135	0	17	581	0	111	520	0
Turn Type	Prot		Perm	Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	8.3	9.7	9.7	5.4	6.8		19.9	19.9		19.9	19.9	
Effective Green, g (s)	8.3	9.7	9.7	5.4	6.8		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.18	0.20	0.20	0.11	0.14		0.42	0.42		0.42	0.42	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	310	381	324	202	249		325	1463		307	1440	
v/s Ratio Prot	c0.11	c0.07		0.06	c0.08			c0.17			0.15	
v/s Ratio Perm			0.00				0.02			0.15		
v/c Ratio	0.63	0.36	0.02	0.56	0.54		0.05	0.40		0.36	0.36	
Uniform Delay, d1	18.1	16.2	15.1	19.9	18.8		8.2	9.6		9.4	9.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.2	0.0	1.9	1.3		0.2	0.5		2.0	0.4	
Delay (s)	21.2	16.4	15.1	21.8	20.1		8.3	10.1		11.4	9.8	
Level of Service	C	B	B	C	C		A	B		B	A	
Approach Delay (s)		18.8			20.7			10.0			10.1	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	545	118	291	0	0	0	0	424	64	61	293	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3470		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3470		1770	3539	
Peak-hour factor, PHF	0.76	0.76	0.76	0.92	0.92	0.92	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	717	155	383	0	0	0	0	573	86	70	337	0
RTOR Reduction (vph)	0	0	210	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	717	155	173	0	0	0	0	642	0	70	337	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	30.5	30.5	30.5					17.2		4.6	27.0	
Effective Green, g (s)	30.5	30.5	30.5					17.2		4.6	27.0	
Actuated g/C Ratio	0.45	0.45	0.45					0.26		0.07	0.40	
Clearance Time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Vehicle Extension (s)	6.2	6.2	6.2					0.2		2.0	0.2	
Lane Grp Cap (vph)	801	843	716					886		121	1418	
v/s Ratio Prot	c0.41	0.08						c0.18		c0.04	0.10	
v/s Ratio Perm			0.11									
v/c Ratio	0.90	0.18	0.24					0.72		0.58	0.24	
Uniform Delay, d1	17.0	11.0	11.3					22.9		30.5	13.4	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	13.9	0.3	0.5					2.5		4.1	0.0	
Delay (s)	30.9	11.3	11.9					25.4		34.6	13.4	
Level of Service	C	B	B					C		C	B	
Approach Delay (s)		22.6			0.0			25.4			17.1	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	15.1
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	173	180	200	0	0	0	0	554	101	244	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3457		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3457		1770	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	194	202	225	0	0	0	0	609	111	260	455	0
RTOR Reduction (vph)	0	0	152	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	194	202	73	0	0	0	0	700	0	260	455	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	18.8	18.8	18.8					17.6		6.3	29.1	
Effective Green, g (s)	18.8	18.8	18.8					17.6		6.3	29.1	
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.11	0.50	
Clearance Time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Vehicle Extension (s)	6.2	6.2	6.2					0.2		2.0	0.2	
Lane Grp Cap (vph)	576	606	515					1053		193	1782	
v/s Ratio Prot	c0.11	0.11						c0.20		c0.15	0.13	
v/s Ratio Perm			0.05									
v/c Ratio	0.34	0.33	0.14					0.66		1.35	0.26	
Uniform Delay, d1	14.8	14.8	13.8					17.5		25.8	8.2	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.0	0.4					1.2		186.5	0.0	
Delay (s)	15.8	15.7	14.2					18.8		212.3	8.2	
Level of Service	B	B	B					B		F	A	
Approach Delay (s)		15.2			0.0			18.8			82.4	
Approach LOS		B			A			B			F	

Intersection Summary

HCM Average Control Delay	39.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	15.1
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	91	156	440	178	788	0	0	282	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					3475	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3475	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	100	171	484	187	829	0	0	307	177
RTOR Reduction (vph)	0	0	0	0	0	64	0	0	0	0	0	133
Lane Group Flow (vph)	0	0	0	0	271	420	187	829	0	0	307	44
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					25.1	25.1	10.2	30.2			16.3	16.3
Effective Green, g (s)					25.1	25.1	10.2	30.2			16.3	16.3
Actuated g/C Ratio					0.38	0.38	0.15	0.46			0.25	0.25
Clearance Time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Vehicle Extension (s)					5.0	5.0	2.0	0.2			0.2	0.2
Lane Grp Cap (vph)					1324	603	274	1622			875	392
v/s Ratio Prot					0.08		c0.11	c0.23			0.09	
v/s Ratio Perm						c0.27						0.03
v/c Ratio					0.20	0.70	0.68	0.51			0.35	0.11
Uniform Delay, d1					13.7	17.2	26.3	12.6			20.4	19.2
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.2	4.4	5.5	0.1			0.1	0.0
Delay (s)					13.9	21.6	31.8	12.7			20.5	19.2
Level of Service					B	C	C	B			C	B
Approach Delay (s)		0.0			18.8			16.3			20.1	
Approach LOS		A			B			B			C	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	95	108	191	306	393	0	0	588	604
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					3459	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3459	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	0	0	0	110	126	222	373	479	0	0	684	702
RTOR Reduction (vph)	0	0	0	0	0	171	0	0	0	0	0	387
Lane Group Flow (vph)	0	0	0	0	236	51	373	479	0	0	684	315
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					13.0	13.0	11.4	33.0			17.9	17.9
Effective Green, g (s)					13.0	13.0	11.4	33.0			17.9	17.9
Actuated g/C Ratio					0.23	0.23	0.20	0.58			0.32	0.32
Clearance Time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Vehicle Extension (s)					5.0	5.0	2.0	0.2			0.2	0.2
Lane Grp Cap (vph)					794	364	357	2063			1119	501
v/s Ratio Prot					c0.07		c0.21	0.14			0.19	
v/s Ratio Perm						0.03						c0.20
v/c Ratio					0.30	0.14	1.04	0.23			0.61	0.63
Uniform Delay, d1					18.0	17.4	22.6	5.7			16.4	16.5
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.4	0.4	59.8	0.0			0.7	1.8
Delay (s)					18.5	17.7	82.4	5.7			17.1	18.3
Level of Service					B	B	F	A			B	B
Approach Delay (s)		0.0			18.1			39.3			17.7	
Approach LOS		A			B			D			B	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	202	60	341	100	64	36	22	882	95	2	210	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	3684		1947	3836		1947	3873	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.60	1.00		0.21	1.00	
Satd. Flow (perm)	1947	2049	1742	1947	3684		1239	3836		438	3873	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	220	65	371	109	70	39	24	959	103	2	228	8
RTOR Reduction (vph)	0	0	0	0	33	0	0	12	0	0	4	0
Lane Group Flow (vph)	220	65	371	109	76	0	24	1050	0	2	232	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases			Free				4			8		
Actuated Green, G (s)	9.7	11.2	47.8	5.9	7.4		18.7	18.7		18.7	18.7	
Effective Green, g (s)	9.7	11.2	47.8	5.9	7.4		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.20	0.23	1.00	0.12	0.15		0.39	0.39		0.39	0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	395	480	1742	240	570		485	1501		171	1515	
v/s Ratio Prot	c0.11	0.03		0.06	0.02			c0.27			0.06	
v/s Ratio Perm			c0.21				0.02			0.00		
v/c Ratio	0.56	0.14	0.21	0.45	0.13		0.05	0.70		0.01	0.15	
Uniform Delay, d1	17.1	14.5	0.0	19.5	17.4		9.0	12.2		8.9	9.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.3	1.4	0.1		0.0	1.4		0.0	0.0	
Delay (s)	18.8	14.6	0.3	20.8	17.5		9.1	13.6		8.9	9.5	
Level of Service	B	B	A	C	B		A	B		A	A	
Approach Delay (s)		7.9			19.2			13.5			9.5	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
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4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	108	95	370	115	216	58	78	354	49	7	654	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	3770		1947	3822		1947	3891	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.31	1.00		0.50	1.00	
Satd. Flow (perm)	1947	2049	1742	1947	3770		642	3822		1020	3891	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	103	402	125	235	63	85	385	53	8	711	2
RTOR Reduction (vph)	0	0	0	0	49	0	0	21	0	0	1	0
Lane Group Flow (vph)	117	103	402	125	249	0	85	417	0	8	712	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases			Free				4			8		
Actuated Green, G (s)	3.7	8.1	36.6	3.7	8.1		12.8	12.8		12.8	12.8	
Effective Green, g (s)	3.7	8.1	36.6	3.7	8.1		12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.10	0.22	1.00	0.10	0.22		0.35	0.35		0.35	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	197	453	1742	197	834		225	1337		357	1361	
v/s Ratio Prot	0.06	0.05		c0.06	0.07			0.11			c0.18	
v/s Ratio Perm			c0.23				0.13			0.01		
v/c Ratio	0.59	0.23	0.23	0.63	0.30		0.38	0.31		0.02	0.52	
Uniform Delay, d1	15.7	11.7	0.0	15.8	11.9		8.9	8.7		7.8	9.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	0.3	0.3	6.5	0.2		1.1	0.1		0.0	0.4	
Delay (s)	20.5	11.9	0.3	22.3	12.1		10.0	8.8		7.8	9.8	
Level of Service	C	B	A	C	B		A	A		A	A	
Approach Delay (s)		6.0			15.1			9.0			9.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	83	23	19	12	1	3	35	72	390	79	54	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	15	12	12	12	12	12	12	12
Total Lost time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Lane Util. Factor	1.00	1.00			1.00	1.00			0.95		1.00	1.00
Frt	1.00	0.93			1.00	0.86			0.98		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1770	1737			1947	1607			3439		1770	1863
Flt Permitted	1.00	1.00			1.00	1.00			0.87		0.52	1.00
Satd. Flow (perm)	1863	1737			2049	1607			3022		968	1863
Peak-hour factor, PHF	0.82	0.82	0.82	0.79	0.79	0.79	0.79	0.96	0.96	0.96	0.77	0.77
Adj. Flow (vph)	101	28	23	15	1	4	44	75	406	82	70	244
RTOR Reduction (vph)	0	0	0	0	0	38	0	0	25	0	0	0
Lane Group Flow (vph)	101	51	0	0	16	10	0	0	538	0	70	244
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	2.7	2.7			2.7	2.7			7.7		7.7	7.7
Effective Green, g (s)	2.7	2.7			2.7	2.7			7.7		7.7	7.7
Actuated g/C Ratio	0.14	0.14			0.14	0.14			0.39		0.39	0.39
Clearance Time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Vehicle Extension (s)	0.2	0.2			0.2	0.2			0.2		0.2	0.2
Lane Grp Cap (vph)	252	234			277	217			1163		373	717
v/s Ratio Prot		0.03				0.01						0.13
v/s Ratio Perm	c0.05				0.01				c0.18		0.07	
v/c Ratio	0.40	0.22			0.06	0.05			0.46		0.19	0.34
Uniform Delay, d1	7.9	7.7			7.5	7.5			4.6		4.1	4.4
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	0.2			0.0	0.0			0.1		0.1	0.1
Delay (s)	8.3	7.9			7.6	7.6			4.7		4.2	4.5
Level of Service	A	A			A	A			A		A	A
Approach Delay (s)		8.2				7.6			4.7			4.2
Approach LOS		A				A			A			A

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	20.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	5	117
Ideal Flow (vphpl)	1900	1900
Lane Width	15	12
Total Lost time (s)	4.8	
Lane Util. Factor	1.00	
Frt	0.85	
Flt Protected	1.00	
Satd. Flow (prot)	1742	
Flt Permitted	1.00	
Satd. Flow (perm)	1742	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	6	152
RTOR Reduction (vph)	93	0
Lane Group Flow (vph)	65	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	7.7	
Effective Green, g (s)	7.7	
Actuated g/C Ratio	0.39	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	671	
v/s Ratio Prot		
v/s Ratio Perm	0.04	
v/c Ratio	0.10	
Uniform Delay, d1	3.9	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	4.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	139	8	63	86	3	14	115	11	334	20	72	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	15	12	12	12	12	12	12	12
Total Lost time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Lane Util. Factor	1.00	1.00			1.00	1.00			0.95		1.00	1.00
Frt	1.00	0.87			1.00	0.87			0.99		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			1.00		0.95	1.00
Satd. Flow (prot)	1770	1615			1947	1614			3505		1770	1863
Flt Permitted	0.65	1.00			0.68	1.00			0.93		0.52	1.00
Satd. Flow (perm)	1216	1615			1387	1614			3281		961	1863
Peak-hour factor, PHF	0.57	0.57	0.57	0.78	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92
Adj. Flow (vph)	244	14	111	110	4	18	147	12	367	22	78	559
RTOR Reduction (vph)	0	0	0	0	0	103	0	0	7	0	0	0
Lane Group Flow (vph)	244	125	0	0	114	62	0	0	394	0	78	559
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	10.0	10.0			10.0	10.0			14.1		14.1	14.1
Effective Green, g (s)	10.0	10.0			10.0	10.0			14.1		14.1	14.1
Actuated g/C Ratio	0.30	0.30			0.30	0.30			0.42		0.42	0.42
Clearance Time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Vehicle Extension (s)	0.2	0.2			0.2	0.2			0.2		0.2	0.2
Lane Grp Cap (vph)	361	479			412	479			1373		402	779
v/s Ratio Prot		0.08				0.04						c0.30
v/s Ratio Perm	c0.20				0.08				0.12		0.08	
v/c Ratio	0.68	0.26			0.28	0.13			0.29		0.19	0.72
Uniform Delay, d1	10.4	9.0			9.1	8.7			6.5		6.2	8.1
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	3.9	0.1			0.1	0.0			0.0		0.1	2.6
Delay (s)	14.3	9.1			9.2	8.7			6.5		6.3	10.8
Level of Service	B	A			A	A			A		A	B
Approach Delay (s)		12.6				8.9			6.5			9.7
Approach LOS		B				A			A			A

Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	33.7	Sum of lost time (s)	9.6
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	4	77
Ideal Flow (vphpl)	1900	1900
Lane Width	15	12
Total Lost time (s)	4.8	
Lane Util. Factor	1.00	
Frt	0.85	
Flt Protected	1.00	
Satd. Flow (prot)	1742	
Flt Permitted	1.00	
Satd. Flow (perm)	1742	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	4	84
RTOR Reduction (vph)	49	0
Lane Group Flow (vph)	39	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	14.1	
Effective Green, g (s)	14.1	
Actuated g/C Ratio	0.42	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	729	
v/s Ratio Prot		
v/s Ratio Perm	0.02	
v/c Ratio	0.05	
Uniform Delay, d1	5.8	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	5.8	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	69	152	169	144	265	204	170	416	311	63	228	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.93		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1716		1770	3308		1770	3312		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1716		1770	3308		1770	3312		1770	3432	
Peak-hour factor, PHF	0.84	0.84	0.84	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Adj. Flow (vph)	82	181	201	169	312	240	177	433	324	79	285	72
RTOR Reduction (vph)	0	40	0	0	134	0	0	135	0	0	24	0
Lane Group Flow (vph)	82	342	0	169	418	0	177	622	0	79	333	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.4	21.8		12.7	27.1		12.9	25.0		7.5	19.6	
Effective Green, g (s)	7.4	21.8		12.7	27.1		12.9	25.0		7.5	19.6	
Actuated g/C Ratio	0.09	0.26		0.15	0.32		0.15	0.30		0.09	0.23	
Clearance Time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	157	447		269	1072		273	990		159	805	
v/s Ratio Prot	0.05	c0.20		c0.10	0.13		c0.10	c0.19		0.04	0.10	
v/s Ratio Perm												
v/c Ratio	0.52	0.77		0.63	0.39		0.65	0.63		0.50	0.41	
Uniform Delay, d1	36.4	28.5		33.2	21.9		33.2	25.3		36.3	27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	9.0		4.5	0.5		5.2	1.8		2.4	0.7	
Delay (s)	39.5	37.5		37.8	22.3		38.4	27.1		38.7	27.8	
Level of Service	D	D		D	C		D	C		D	C	
Approach Delay (s)		37.9			26.0			29.2			29.8	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	12.4
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	62	176	158	145	384	140	232	299	208	61	327	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.96		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1730		1770	3397		1770	3321		1770	3471	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1730		1770	3397		1770	3321		1770	3471	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.99	0.99	0.99	0.83	0.83	0.83
Adj. Flow (vph)	71	202	182	158	417	152	234	302	210	73	394	58
RTOR Reduction (vph)	0	33	0	0	36	0	0	122	0	0	13	0
Lane Group Flow (vph)	71	351	0	158	533	0	234	390	0	73	439	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.2	22.0		12.3	27.1		14.6	27.0		7.4	19.8	
Effective Green, g (s)	7.2	22.0		12.3	27.1		14.6	27.0		7.4	19.8	
Actuated g/C Ratio	0.08	0.26		0.14	0.32		0.17	0.32		0.09	0.23	
Clearance Time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	149	446		255	1079		303	1051		154	806	
v/s Ratio Prot	0.04	c0.20		c0.09	0.16		c0.13	0.12		0.04	c0.13	
v/s Ratio Perm												
v/c Ratio	0.48	0.79		0.62	0.49		0.77	0.37		0.47	0.54	
Uniform Delay, d1	37.3	29.5		34.3	23.5		33.8	22.6		37.1	28.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	10.3		4.4	0.7		11.6	0.5		2.3	1.3	
Delay (s)	39.6	39.8		38.7	24.3		45.3	23.0		39.4	30.1	
Level of Service	D	D		D	C		D	C		D	C	
Approach Delay (s)		39.7			27.4			30.0			31.4	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	16.6
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	39	247	44	0	0	0	0	402	182	113	411	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.95		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5051	1583					3374		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.32	1.00	
Satd. Flow (perm)		5051	1583					3374		593	3539	
Peak-hour factor, PHF	0.80	0.80	0.80	0.92	0.92	0.92	0.77	0.77	0.77	0.94	0.94	0.94
Adj. Flow (vph)	49	309	55	0	0	0	0	522	236	120	437	0
RTOR Reduction (vph)	0	0	36	0	0	0	0	88	0	0	0	0
Lane Group Flow (vph)	0	358	19	0	0	0	0	670	0	120	437	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					31.0		31.0	31.0	
Effective Green, g (s)		20.0	20.0					31.0		31.0	31.0	
Actuated g/C Ratio		0.34	0.34					0.52		0.52	0.52	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1701	533					1761		309	1847	
v/s Ratio Prot		c0.07						0.20			0.12	
v/s Ratio Perm			0.01							c0.20		
v/c Ratio		0.21	0.03					0.38		0.39	0.24	
Uniform Delay, d1		14.1	13.2					8.5		8.5	7.7	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.3	0.0	
Delay (s)		14.1	13.2					8.5		8.8	7.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		14.0			0.0			8.5			8.0	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
43: M St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	47	195	38	0	0	0	0	473	125	49	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5037	1583					3428		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.33	1.00	
Satd. Flow (perm)		5037	1583					3428		611	3539	
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.81	0.81	0.81	0.91	0.91	0.91
Adj. Flow (vph)	57	238	46	0	0	0	0	584	154	54	457	0
RTOR Reduction (vph)	0	0	31	0	0	0	0	40	0	0	0	0
Lane Group Flow (vph)	0	295	15	0	0	0	0	698	0	54	457	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					31.0		31.0	31.0	
Effective Green, g (s)		20.0	20.0					31.0		31.0	31.0	
Actuated g/C Ratio		0.34	0.34					0.52		0.52	0.52	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1696	533					1789		319	1847	
v/s Ratio Prot		c0.06						c0.20			0.13	
v/s Ratio Perm			0.01							0.09		
v/c Ratio		0.17	0.03					0.39		0.17	0.25	
Uniform Delay, d1		13.9	13.2					8.5		7.4	7.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.1	0.0	
Delay (s)		13.9	13.2					8.6		7.5	7.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		13.8			0.0			8.6			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	46	136	33	50	302	0	0	569	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	15	15	15	12	12	15	15	12	12
Total Lost time (s)					4.2		4.2	4.2			4.2	
Lane Util. Factor					0.95		1.00	0.95			0.95	
Frt					0.98		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					3763		1770	3539			3463	
Flt Permitted					0.99		0.31	1.00			1.00	
Satd. Flow (perm)					3763		571	3539			3463	
Peak-hour factor, PHF	0.92	0.92	0.92	0.75	0.75	0.75	0.97	0.97	0.97	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	61	181	44	52	311	0	0	647	109
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	259	0	52	311	0	0	730	0
Turn Type				Split			Perm					
Protected Phases				2	2			4			4	
Permitted Phases							4					
Actuated Green, G (s)					19.8		23.8	23.8			23.8	
Effective Green, g (s)					19.8		23.8	23.8			23.8	
Actuated g/C Ratio					0.38		0.46	0.46			0.46	
Clearance Time (s)					4.2		4.2	4.2			4.2	
Vehicle Extension (s)					0.2		0.2	0.2			0.2	
Lane Grp Cap (vph)					1433		261	1620			1585	
v/s Ratio Prot					c0.07			0.09			c0.21	
v/s Ratio Perm							0.09					
v/c Ratio					0.18		0.20	0.19			0.46	
Uniform Delay, d1					10.7		8.4	8.4			9.7	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					0.0		0.1	0.0			0.1	
Delay (s)					10.7		8.6	8.4			9.8	
Level of Service					B		A	A			A	
Approach Delay (s)		0.0			10.7			8.4			9.8	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	44	305	94	75	561	0	0	364	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	15	15	15	12	12	15	15	12	12
Total Lost time (s)					4.2		4.2	4.2			4.2	
Lane Util. Factor					0.95		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.97	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					3750		1770	3539			3449	
Flt Permitted					1.00		0.48	1.00			1.00	
Satd. Flow (perm)					3750		899	3539			3449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	55	381	118	82	610	0	0	383	78
RTOR Reduction (vph)	0	0	0	0	47	0	0	0	0	0	33	0
Lane Group Flow (vph)	0	0	0	0	507	0	82	610	0	0	428	0
Turn Type				Split			Perm					
Protected Phases				2	2			4			4	
Permitted Phases							4					
Actuated Green, G (s)					19.8		23.8	23.8			23.8	
Effective Green, g (s)					19.8		23.8	23.8			23.8	
Actuated g/C Ratio					0.38		0.46	0.46			0.46	
Clearance Time (s)					4.2		4.2	4.2			4.2	
Vehicle Extension (s)					0.2		0.2	0.2			0.2	
Lane Grp Cap (vph)					1428		411	1620			1579	
v/s Ratio Prot					c0.14			c0.17			0.12	
v/s Ratio Perm							0.09					
v/c Ratio					0.35		0.20	0.38			0.27	
Uniform Delay, d1					11.5		8.4	9.2			8.7	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					0.1		0.1	0.1			0.0	
Delay (s)					11.6		8.5	9.3			8.8	
Level of Service					B		A	A			A	
Approach Delay (s)		0.0			11.6			9.2			8.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	104	183	25	83	180	53	24	204	32	68	460	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1799		1770	3539	1583	1770	3539	1583
Flt Permitted	0.58	1.00	1.00	0.62	1.00		0.42	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	1084	1863	1583	1150	1799		785	3539	1583	1110	3539	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.81	0.81	0.81	0.86	0.86	0.86
Adj. Flow (vph)	122	215	29	87	189	56	30	252	40	79	535	172
RTOR Reduction (vph)	0	0	17	0	15	0	0	0	23	0	0	97
Lane Group Flow (vph)	122	215	12	87	230	0	30	252	17	79	535	75
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4		4	4		4
Actuated Green, G (s)	25.0	25.0	25.0	25.0	25.0		26.0	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.0	25.0	25.0	25.0	25.0		26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	452	776	660	479	750		340	1534	686	481	1534	686
v/s Ratio Prot		0.12			c0.13			0.07			c0.15	
v/s Ratio Perm	0.11		0.01	0.08			0.04		0.01	0.07		0.05
v/c Ratio	0.27	0.28	0.02	0.18	0.31		0.09	0.16	0.03	0.16	0.35	0.11
Uniform Delay, d1	11.5	11.5	10.3	11.0	11.7		10.0	10.4	9.7	10.4	11.3	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.0	0.1	0.1		0.0	0.0	0.0	0.1	0.1	0.0
Delay (s)	11.6	11.6	10.3	11.1	11.8		10.1	10.4	9.7	10.4	11.4	10.1
Level of Service	B	B	B	B	B		B	B	A	B	B	B
Approach Delay (s)		11.5			11.6			10.3			11.0	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	150	229	39	78	215	94	43	563	81	56	305	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1778		1770	3539	1583	1770	3539	1583
Flt Permitted	0.40	1.00	1.00	0.58	1.00		0.55	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	744	1863	1583	1083	1778		1016	3539	1583	670	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.75	0.75	0.75	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	161	246	42	104	287	125	48	633	91	63	343	116
RTOR Reduction (vph)	0	0	24	0	21	0	0	0	52	0	0	66
Lane Group Flow (vph)	161	246	18	104	391	0	48	633	39	63	343	50
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4		4	4		4
Actuated Green, G (s)	25.3	25.3	25.3	25.3	25.3		26.0	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.3	25.3	25.3	25.3	25.3		26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	312	782	664	454	746		438	1526	683	289	1526	683
v/s Ratio Prot		0.13			c0.22			c0.18			0.10	
v/s Ratio Perm	0.22		0.01	0.10			0.05		0.02	0.09		0.03
v/c Ratio	0.52	0.31	0.03	0.23	0.52		0.11	0.41	0.06	0.22	0.22	0.07
Uniform Delay, d1	13.0	11.7	10.3	11.2	13.0		10.2	11.9	10.0	10.8	10.8	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.0	0.1	0.3		0.0	0.1	0.0	0.1	0.0	0.0
Delay (s)	13.6	11.8	10.3	11.3	13.3		10.3	11.9	10.0	10.9	10.8	10.1
Level of Service	B	B	B	B	B		B	B	B	B	B	B
Approach Delay (s)		12.3			12.9			11.6			10.7	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
46: E Divisadero St & Fresno St.

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	8	69	6	459	106	367	234	275	17	31	150	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.88	1.00	1.00	0.97	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	1841		1681	1715	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.41	1.00		0.68	0.73	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	760	1841		1196	1298	1583	1770	2787	1583	1770	3433	1583
Peak-hour factor, PHF	0.59	0.59	0.59	0.87	0.87	0.87	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	14	117	10	528	122	422	266	312	19	35	169	234
RTOR Reduction (vph)	0	4	0	0	0	285	0	0	11	0	0	184
Lane Group Flow (vph)	14	123	0	317	333	137	266	312	8	35	169	50
Turn Type	Perm			Perm		Perm		custom	custom	Prot		Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4			2			6
Actuated Green, G (s)	18.7	18.7		18.7	18.7	18.7	13.5	24.8	24.8	1.1	12.4	12.4
Effective Green, g (s)	18.7	18.7		18.7	18.7	18.7	13.5	24.8	24.8	1.1	12.4	12.4
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.23	0.43	0.43	0.02	0.21	0.21
Clearance Time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	4.8	4.8	2.0	4.8	4.8
Lane Grp Cap (vph)	246	596		387	420	512	413	1196	679	34	736	340
v/s Ratio Prot		0.07					c0.15	c0.11		0.02	0.05	
v/s Ratio Perm	0.02			c0.27	0.26	0.09			0.01			0.03
v/c Ratio	0.06	0.21		0.82	0.79	0.27	0.64	0.26	0.01	1.03	0.23	0.15
Uniform Delay, d1	13.5	14.2		18.0	17.8	14.5	20.0	10.6	9.5	28.3	18.8	18.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2		13.0	10.1	0.3	3.4	0.2	0.0	163.4	0.3	0.4
Delay (s)	13.6	14.3		31.0	27.9	14.8	23.4	10.8	9.5	191.7	19.1	18.8
Level of Service	B	B		C	C	B	C	B	A	F	B	B
Approach Delay (s)		14.3			23.7		16.4				32.7	
Approach LOS		B			C		B				C	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	8.6
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	4	117	10	266	23	196	323	238	8	8	318	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.88	1.00	1.00	0.97	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	1841		1681	1698	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.60	1.00		0.66	0.66	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1111	1841		1170	1165	1583	1770	2787	1583	1770	3433	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	5	139	12	313	27	231	351	259	9	10	383	606
RTOR Reduction (vph)	0	5	0	0	0	180	0	0	4	0	0	272
Lane Group Flow (vph)	5	146	0	166	174	51	351	259	5	10	383	334
Turn Type	Perm			Perm		Perm		custom	custom	Prot		Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4			2			6
Actuated Green, G (s)	14.2	14.2		14.2	14.2	14.2	16.2	36.0	36.0	0.3	20.1	20.1
Effective Green, g (s)	14.2	14.2		14.2	14.2	14.2	16.2	36.0	36.0	0.3	20.1	20.1
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.25	0.57	0.57	0.00	0.32	0.32
Clearance Time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	4.8	4.8	2.0	4.8	4.8
Lane Grp Cap (vph)	248	410		261	260	353	450	1575	895	8	1083	500
v/s Ratio Prot		0.08					c0.20	0.09		0.01	0.11	
v/s Ratio Perm	0.00			0.14	c0.15	0.03			0.00			c0.21
v/c Ratio	0.02	0.36		0.64	0.67	0.15	0.78	0.16	0.01	1.25	0.35	0.67
Uniform Delay, d1	19.3	20.9		22.4	22.6	19.9	22.1	6.6	6.0	31.7	16.8	18.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.5		5.2	6.7	0.2	8.5	0.1	0.0	416.4	0.4	4.3
Delay (s)	19.4	21.4		27.6	29.3	20.1	30.6	6.7	6.0	448.1	17.2	23.2
Level of Service	B	C		C	C	C	C	A	A	F	B	C
Approach Delay (s)		21.4			25.1		20.3				25.1	
Approach LOS		C			C		C				C	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	13.2
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	7	134	110	599	84	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	1.00	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1863	1583	1273	1863	1863	1583
Peak-hour factor, PHF	0.94	0.94	0.65	0.65	0.74	0.74
Adj. Flow (vph)	7	143	169	922	114	20
RTOR Reduction (vph)	0	143	0	0	0	5
Lane Group Flow (vph)	7	0	169	922	114	15
Turn Type		NA	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	3.4	0.0	42.7	42.7	42.7	42.7
Effective Green, g (s)	3.4	0.0	42.7	42.7	42.7	42.7
Actuated g/C Ratio	0.06	0.00	0.77	0.77	0.77	0.77
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	115	0	987	1444	1444	1227
v/s Ratio Prot				c0.49	0.06	
v/s Ratio Perm	c0.00		0.13			0.01
v/c Ratio	0.06	0.00	0.17	0.64	0.08	0.01
Uniform Delay, d1	24.3	27.6	1.6	2.8	1.5	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	0.0	0.7	0.0	0.0
Delay (s)	24.4	27.6	1.6	3.5	1.5	1.4
Level of Service	C	C	A	A	A	A
Approach Delay (s)	27.4			3.2	1.5	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	9	105	103	387	277	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	1.00	1.00	0.55	1.00	1.00	1.00
Satd. Flow (perm)	1863	1583	1022	1863	1863	1583
Peak-hour factor, PHF	0.61	0.61	0.76	0.76	0.78	0.78
Adj. Flow (vph)	15	172	136	509	355	28
RTOR Reduction (vph)	0	172	0	0	0	6
Lane Group Flow (vph)	15	0	136	509	355	22
Turn Type		NA	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	3.4	0.0	42.7	42.7	42.7	42.7
Effective Green, g (s)	3.4	0.0	42.7	42.7	42.7	42.7
Actuated g/C Ratio	0.06	0.00	0.77	0.77	0.77	0.77
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	115	0	792	1444	1444	1227
v/s Ratio Prot				c0.27	0.19	
v/s Ratio Perm	c0.01		0.13			0.01
v/c Ratio	0.13	0.00	0.17	0.35	0.25	0.02
Uniform Delay, d1	24.5	27.6	1.6	1.9	1.7	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.0	0.1	0.0	0.0
Delay (s)	24.6	27.6	1.6	2.0	1.8	1.4
Level of Service	C	C	A	A	A	A
Approach Delay (s)	27.3			1.9	1.7	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
48: E St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	100	0	0	197	11	440	331	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.91				
Frt		1.00			0.99			0.99				
Flt Protected		0.98			1.00			0.97				
Satd. Flow (prot)		3463			3512			4919				
Flt Permitted		0.75			1.00			0.97				
Satd. Flow (perm)		2642			3512			4919				
Peak-hour factor, PHF	0.78	0.78	0.78	0.88	0.88	0.88	0.82	0.82	0.82	0.92	0.92	0.92
Adj. Flow (vph)	100	128	0	0	224	12	537	404	41	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	228	0	0	229	0	0	973	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		8			4		2	2				
Permitted Phases	8											
Actuated Green, G (s)		19.0			19.0			25.0				
Effective Green, g (s)		19.0			19.0			25.0				
Actuated g/C Ratio		0.35			0.35			0.46				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		930			1236			2277				
v/s Ratio Prot					0.07			c0.20				
v/s Ratio Perm		c0.09										
v/c Ratio		0.25			0.19			0.43				
Uniform Delay, d1		12.4			12.1			9.7				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.1			0.0			0.0				
Delay (s)		12.5			12.2			9.8				
Level of Service		B			B			A				
Approach Delay (s)		12.5			12.2			9.8			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
48: E St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	68	156	0	0	171	7	255	148	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.91				
Frt		1.00			0.99			0.99				
Flt Protected		0.99			1.00			0.97				
Satd. Flow (prot)		3486			3519			4902				
Flt Permitted		0.80			1.00			0.97				
Satd. Flow (perm)		2838			3519			4902				
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	80	184	0	0	222	9	287	166	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	264	0	0	226	0	0	465	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		8			4		2	2				
Permitted Phases	8											
Actuated Green, G (s)		19.0			19.0			25.0				
Effective Green, g (s)		19.0			19.0			25.0				
Actuated g/C Ratio		0.35			0.35			0.46				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		999			1238			2269				
v/s Ratio Prot					0.06			c0.09				
v/s Ratio Perm		c0.09										
v/c Ratio		0.26			0.18			0.21				
Uniform Delay, d1		12.5			12.1			8.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.1			0.0			0.0				
Delay (s)		12.6			12.1			8.6				
Level of Service		B			B			A				
Approach Delay (s)		12.6			12.1			8.6			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	397	148	0	0	13	8	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.2	4.2						
Lane Util. Factor	1.00	1.00			1.00	1.00						
Frt	1.00	1.00			1.00	0.85						
Flt Protected	0.95	1.00			1.00	1.00						
Satd. Flow (prot)	1770	1863			1863	1583						
Flt Permitted	0.95	1.00			1.00	1.00						
Satd. Flow (perm)	1770	1863			1863	1583						
Peak-hour factor, PHF	0.80	0.80	0.80	0.75	0.75	0.75	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	496	185	0	0	17	11	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	0	0	0	0
Lane Group Flow (vph)	496	185	0	0	17	0	0	0	0	0	0	0
Turn Type	Split			Split		Perm	Perm		Perm	Perm		
Protected Phases	2	2		1	1			8			8	
Permitted Phases						1	8		8	8		
Actuated Green, G (s)	16.6	16.6			0.9	0.9						
Effective Green, g (s)	16.6	16.6			0.9	0.9						
Actuated g/C Ratio	0.63	0.63			0.03	0.03						
Clearance Time (s)	4.6	4.6			4.2	4.2						
Vehicle Extension (s)	3.8	3.8			2.0	2.0						
Lane Grp Cap (vph)	1117	1176			64	54						
v/s Ratio Prot	c0.28	0.10			c0.01							
v/s Ratio Perm						0.00						
v/c Ratio	0.44	0.16			0.27	0.01						
Uniform Delay, d1	2.5	2.0			12.4	12.3						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.4	0.1			0.8	0.0						
Delay (s)	2.9	2.1			13.2	12.3						
Level of Service	A	A			B	B						
Approach Delay (s)		2.6			12.8			0.0			0.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	26.3	Sum of lost time (s)	8.8
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	58	0	0	62	37	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.2	4.2						
Lane Util. Factor	1.00	1.00			1.00	1.00						
Frt	1.00	1.00			1.00	0.85						
Flt Protected	0.95	1.00			1.00	1.00						
Satd. Flow (prot)	1770	1863			1863	1583						
Flt Permitted	0.95	1.00			1.00	1.00						
Satd. Flow (perm)	1770	1863			1863	1583						
Peak-hour factor, PHF	0.85	0.85	0.85	0.52	0.52	0.52	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	280	68	0	0	119	71	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	0	0	0	0	0
Lane Group Flow (vph)	280	68	0	0	119	17	0	0	0	0	0	0
Turn Type	Split			Split		Perm	Perm		Perm	Perm		
Protected Phases	2	2		1	1			8			8	
Permitted Phases						1	8		8	8		
Actuated Green, G (s)	8.6	8.6			5.5	5.5						
Effective Green, g (s)	8.6	8.6			5.5	5.5						
Actuated g/C Ratio	0.38	0.38			0.24	0.24						
Clearance Time (s)	4.6	4.6			4.2	4.2						
Vehicle Extension (s)	3.8	3.8			2.0	2.0						
Lane Grp Cap (vph)	665	700			447	380						
v/s Ratio Prot	c0.16	0.04			c0.06							
v/s Ratio Perm						0.01						
v/c Ratio	0.42	0.10			0.27	0.04						
Uniform Delay, d1	5.3	4.6			7.1	6.7						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.6	0.1			0.1	0.0						
Delay (s)	5.9	4.7			7.2	6.7						
Level of Service	A	A			A	A						
Approach Delay (s)		5.6			7.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	22.9	Sum of lost time (s)	8.8
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
50: Van Ness Ave & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	305	0	0	308	44	42	284	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.96				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1828		1770	1789				
Flt Permitted	0.45	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	840	1863			1828		1770	1789				
Peak-hour factor, PHF	0.87	0.87	0.87	0.91	0.91	0.91	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	184	351	0	0	338	48	49	334	120	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	18	0	0	0	0
Lane Group Flow (vph)	184	351	0	0	378	0	49	436	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	27.0	27.0			27.0		22.3	22.3				
Effective Green, g (s)	27.0	27.0			27.0		22.3	22.3				
Actuated g/C Ratio	0.47	0.47			0.47		0.39	0.39				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	393	872			855		684	691				
v/s Ratio Prot		0.19			0.21		0.03	c0.24				
v/s Ratio Perm	c0.22											
v/c Ratio	0.47	0.40			0.44		0.07	0.63				
Uniform Delay, d1	10.5	10.1			10.3		11.2	14.4				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	0.3	0.1			0.1		0.0	1.4				
Delay (s)	10.8	10.2			10.4		11.2	15.8				
Level of Service	B	B			B		B	B				
Approach Delay (s)		10.4			10.4			15.3			0.0	
Approach LOS		B			B			B			A	

Intersection Summary				
HCM Average Control Delay	12.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	8.4	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	95	149	0	0	573	42	44	177	79	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.95				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1844		1770	1777				
Flt Permitted	0.18	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	331	1863			1844		1770	1777				
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.76	0.76	0.76	0.92	0.92	0.92
Adj. Flow (vph)	109	171	0	0	666	49	58	233	104	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	23	0	0	0	0
Lane Group Flow (vph)	109	171	0	0	711	0	58	314	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	29.0	29.0			29.0		22.1	22.1				
Effective Green, g (s)	29.0	29.0			29.0		22.1	22.1				
Actuated g/C Ratio	0.49	0.49			0.49		0.37	0.37				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	161	908			899		657	660				
v/s Ratio Prot		0.09			c0.39		0.03	c0.18				
v/s Ratio Perm	0.33											
v/c Ratio	0.68	0.19			0.79		0.09	0.48				
Uniform Delay, d1	11.7	8.6			12.7		12.2	14.3				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	8.5	0.0			4.5		0.0	0.2				
Delay (s)	20.2	8.6			17.2		12.2	14.5				
Level of Service	C	A			B		B	B				
Approach Delay (s)		13.1			17.2			14.1			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	0	42	246	92	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2			
Lane Util. Factor		1.00	0.95			
Frt		0.86	0.96			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3395			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3395			
Peak-hour factor, PHF	0.81	0.81	0.86	0.86	0.92	0.92
Adj. Flow (vph)	0	52	286	107	0	0
RTOR Reduction (vph)	0	43	56	0	0	0
Lane Group Flow (vph)	0	9	337	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		4.0	11.5			
Effective Green, g (s)		4.0	11.5			
Actuated g/C Ratio		0.17	0.48			
Clearance Time (s)		4.2	4.2			
Vehicle Extension (s)		0.2	6.0			
Lane Grp Cap (vph)		270	1634			
v/s Ratio Prot			c0.10			
v/s Ratio Perm		c0.01				
v/c Ratio		0.03	0.21			
Uniform Delay, d1		8.3	3.6			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.2			
Delay (s)		8.3	3.7			
Level of Service		A	A			
Approach Delay (s)	8.3		3.7		0.0	
Approach LOS	A		A		A	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	23.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	0	112	387	49	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2			
Lane Util. Factor		1.00	0.95			
Frt		0.86	0.98			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3480			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3480			
Peak-hour factor, PHF	0.85	0.85	0.69	0.69	0.92	0.92
Adj. Flow (vph)	0	132	561	71	0	0
RTOR Reduction (vph)	0	117	13	0	0	0
Lane Group Flow (vph)	0	15	619	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		3.1	15.8			
Effective Green, g (s)		3.1	15.8			
Actuated g/C Ratio		0.11	0.58			
Clearance Time (s)		4.2	4.2			
Vehicle Extension (s)		0.2	6.0			
Lane Grp Cap (vph)		183	2014			
v/s Ratio Prot			c0.18			
v/s Ratio Perm		c0.01				
v/c Ratio		0.08	0.31			
Uniform Delay, d1		10.8	2.9			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.1	0.2			
Delay (s)		10.9	3.2			
Level of Service		B	A			
Approach Delay (s)	10.9		3.2			0.0
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	27.3	Sum of lost time (s)	8.4
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	164	175	18	262	335	0	0	0	25	249	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4			5.4					4.0	5.4	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frt		0.92			0.92					1.00	0.96	
Flt Protected		1.00			1.00					0.95	1.00	
Satd. Flow (prot)		3265			3245					1770	3411	
Flt Permitted		1.00			0.93					0.95	1.00	
Satd. Flow (perm)		3265			3007					1770	3411	
Peak-hour factor, PHF	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	195	208	21	305	390	0	0	0	27	268	85
RTOR Reduction (vph)	0	157	0	0	278	0	0	0	0	0	49	0
Lane Group Flow (vph)	0	246	0	0	438	0	0	0	0	27	304	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		6.6			6.6					1.5	9.5	
Effective Green, g (s)		6.6			6.6					1.5	9.5	
Actuated g/C Ratio		0.25			0.25					0.06	0.35	
Clearance Time (s)		5.4			5.4					4.0	5.4	
Vehicle Extension (s)		0.2			0.2					3.0	0.2	
Lane Grp Cap (vph)		801			738					99	1205	
v/s Ratio Prot		0.08								0.02	c0.09	
v/s Ratio Perm					c0.15							
v/c Ratio		0.31			0.59					0.27	0.25	
Uniform Delay, d1		8.3			9.0					12.2	6.2	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		0.1			0.9					1.5	0.0	
Delay (s)		8.4			9.8					13.7	6.2	
Level of Service		A			A					B	A	
Approach Delay (s)		8.4			9.8			0.0			6.7	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.9	Sum of lost time (s)	10.8
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	177	394	42	159	201	0	0	0	39	767	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4			5.4					5.4	5.4	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frt		0.90			0.93					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3173			3257					1770	3487	
Flt Permitted		1.00			0.74					0.95	1.00	
Satd. Flow (perm)		3173			2413					1770	3487	
Peak-hour factor, PHF	0.78	0.78	0.78	0.85	0.85	0.85	0.92	0.92	0.92	0.74	0.74	0.74
Adj. Flow (vph)	0	227	505	49	187	236	0	0	0	53	1036	114
RTOR Reduction (vph)	0	130	0	0	171	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	602	0	0	301	0	0	0	0	53	1139	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		13.2			13.2					4.1	24.2	
Effective Green, g (s)		13.2			13.2					4.1	24.2	
Actuated g/C Ratio		0.27			0.27					0.09	0.50	
Clearance Time (s)		5.4			5.4					5.4	5.4	
Vehicle Extension (s)		0.2			0.2					0.2	0.2	
Lane Grp Cap (vph)		869			661					151	1751	
v/s Ratio Prot		c0.19								0.03	c0.33	
v/s Ratio Perm					0.12							
v/c Ratio		0.69			0.45					0.35	0.65	
Uniform Delay, d1		15.7			14.5					20.8	8.9	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		1.9			0.2					0.5	0.7	
Delay (s)		17.6			14.7					21.3	9.5	
Level of Service		B			B					C	A	
Approach Delay (s)		17.6			14.7			0.0			10.1	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
53: Broadway St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	112	44	5	37	0	52	319	340	115	237	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1784		1770	1863		1770	1863	1583	1770	1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1784		1770	1863		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.58	0.58	0.58	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	132	52	9	64	0	57	347	370	120	247	3
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	204	0	0	2
Lane Group Flow (vph)	0	165	0	9	64	0	57	347	166	120	247	1
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)		19.0		0.7	23.7		2.4	32.7	32.7	4.0	34.3	34.3
Effective Green, g (s)		19.0		0.7	23.7		2.4	32.7	32.7	4.0	34.3	34.3
Actuated g/C Ratio		0.26		0.01	0.33		0.03	0.45	0.45	0.05	0.47	0.47
Clearance Time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)		0.2		3.0	0.2		3.0	0.2	0.2	3.0	0.2	0.2
Lane Grp Cap (vph)		466		17	606		58	837	711	97	878	746
v/s Ratio Prot		c0.09		c0.01	0.03		0.03	c0.19		c0.07	0.13	
v/s Ratio Perm									0.10			0.00
v/c Ratio		0.35		0.53	0.11		0.98	0.41	0.23	1.24	0.28	0.00
Uniform Delay, d1		21.9		35.9	17.1		35.2	13.6	12.3	34.4	11.7	10.2
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2		26.7	0.0		111.4	0.1	0.1	168.1	0.1	0.0
Delay (s)		22.1		62.5	17.2		146.6	13.7	12.4	202.5	11.8	10.2
Level of Service		C		E	B		F	B	B	F	B	B
Approach Delay (s)		22.1			22.8			22.9			73.6	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	36.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.4
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	44	76	75	46	0	29	197	204	30	533	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.2	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.90		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1685		1770	1863		1770	1863	1583	1770	1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1685		1770	1863		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.69	0.69	0.69	0.92	0.92	0.92	0.78	0.78	0.78
Adj. Flow (vph)	0	48	84	109	67	0	32	214	222	38	683	46
RTOR Reduction (vph)	0	62	0	0	0	0	0	0	141	0	0	9
Lane Group Flow (vph)	0	70	0	109	67	0	32	214	81	38	683	37
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)		14.5		11.1	29.6		3.0	33.0	33.0	15.7	45.9	45.9
Effective Green, g (s)		14.5		11.1	29.6		3.0	33.0	33.0	15.7	45.9	45.9
Actuated g/C Ratio		0.16		0.12	0.33		0.03	0.36	0.36	0.17	0.50	0.50
Clearance Time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.2	4.2	4.2
Vehicle Extension (s)		0.2		3.0	0.2		3.0	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)		269		216	607		58	676	575	306	941	799
v/s Ratio Prot		c0.04		c0.06	0.04		c0.02	0.11		0.02	c0.37	
v/s Ratio Perm									0.05			0.02
v/c Ratio		0.26		0.50	0.11		0.55	0.32	0.14	0.12	0.73	0.05
Uniform Delay, d1		33.5		37.3	21.4		43.3	20.8	19.4	31.8	17.6	11.4
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2		1.9	0.0		10.9	0.1	0.0	0.1	2.4	0.0
Delay (s)		33.7		39.2	21.5		54.2	20.9	19.5	31.9	20.0	11.4
Level of Service		C		D	C		D	C	B	C	B	B
Approach Delay (s)		33.7			32.4			22.5			20.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	16.4
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	166	5	76	272	0	0	0	142	157	194	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		1.00		1.00	1.00			0.85		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1855		1770	1863			1583		1770	1853	
Flt Permitted		1.00		0.57	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1855		1059	1863			1583		1770	1853	
Peak-hour factor, PHF	0.86	0.86	0.86	0.93	0.93	0.93	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	193	6	82	292	0	0	0	154	194	240	9
RTOR Reduction (vph)	0	1	0	0	0	0	0	114	0	0	1	0
Lane Group Flow (vph)	0	198	0	82	292	0	0	40	0	194	248	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		28.0		28.0	28.0			22.0		22.0	48.2	
Effective Green, g (s)		28.0		28.0	28.0			22.0		22.0	48.2	
Actuated g/C Ratio		0.33		0.33	0.33			0.26		0.26	0.57	
Clearance Time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Vehicle Extension (s)		0.2		0.2	0.2			0.2		0.2	0.2	
Lane Grp Cap (vph)		614		350	617			412		460	1056	
v/s Ratio Prot		0.11			c0.16			0.03		c0.11	c0.13	
v/s Ratio Perm				0.08								
v/c Ratio		0.32		0.23	0.47			0.10		0.42	0.23	
Uniform Delay, d1		21.2		20.5	22.4			23.8		26.0	9.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.1	0.2			0.0		0.2	0.0	
Delay (s)		21.3		20.7	22.7			23.8		26.2	9.1	
Level of Service		C		C	C			C		C	A	
Approach Delay (s)		21.3			22.2			23.8			16.6	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	5	121	498	0	0	0	86	83	409	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.99		1.00	1.00			0.85		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1848		1770	1863			1583		1770	1839	
Flt Permitted		1.00		0.70	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1848		1305	1863			1583		1770	1839	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	0	82	5	149	615	0	0	0	93	104	511	48
RTOR Reduction (vph)	0	3	0	0	0	0	0	67	0	0	4	0
Lane Group Flow (vph)	0	84	0	149	615	0	0	26	0	104	555	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		28.9		28.9	28.9			22.5		16.5	43.2	
Effective Green, g (s)		28.9		28.9	28.9			22.5		16.5	43.2	
Actuated g/C Ratio		0.36		0.36	0.36			0.28		0.20	0.54	
Clearance Time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Vehicle Extension (s)		0.2		0.2	0.2			0.2		0.2	0.2	
Lane Grp Cap (vph)		663		469	669			442		363	987	
v/s Ratio Prot		0.05			c0.33			0.02		0.06	c0.30	
v/s Ratio Perm				0.11								
v/c Ratio		0.13		0.32	0.92			0.06		0.29	0.56	
Uniform Delay, d1		17.3		18.7	24.7			21.2		27.0	12.4	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.1	17.4			0.0		0.2	0.4	
Delay (s)		17.4		18.8	42.1			21.3		27.2	12.8	
Level of Service		B		B	D			C		C	B	
Approach Delay (s)		17.4			37.5			21.3			15.1	
Approach LOS		B			D			C			B	

Intersection Summary

HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	167	659	1	0	9	23	47	0	97	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.9	4.9		4.2			4.0		4.6	4.6
Lane Util. Factor	1.00	0.88		1.00			1.00		1.00	1.00
Frt	1.00	0.85		0.86			1.00		1.00	1.00
Flt Protected	0.95	1.00		1.00			0.98		0.95	1.00
Satd. Flow (prot)	1770	2787		1611			1832		1770	1863
Flt Permitted	0.95	1.00		1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787		1611			1832		1410	1863
Peak-hour factor, PHF	0.73	0.73	0.73	0.45	0.45	0.63	0.63	0.92	0.65	0.65
Adj. Flow (vph)	229	903	1	0	20	37	75	0	149	157
RTOR Reduction (vph)	0	0	0	20	0	0	0	0	0	0
Lane Group Flow (vph)	229	904	0	0	0	0	112	0	149	157
Turn Type		Prot				Split			Perm	
Protected Phases	2	2		3		1	1	4		4
Permitted Phases									4	
Actuated Green, G (s)	20.5	20.5		1.0			6.1		11.5	11.5
Effective Green, g (s)	20.5	20.5		1.0			6.1		11.5	11.5
Actuated g/C Ratio	0.36	0.36		0.02			0.11		0.20	0.20
Clearance Time (s)	4.9	4.9		4.2			4.0		4.6	4.6
Vehicle Extension (s)	4.0	4.0		2.0			2.0		4.0	4.0
Lane Grp Cap (vph)	639	1006		28			197		285	377
v/s Ratio Prot	0.13	c0.32		c0.00			c0.06			0.08
v/s Ratio Perm									c0.11	
v/c Ratio	0.36	0.90		0.01			0.57		0.52	0.42
Uniform Delay, d1	13.3	17.2		27.4			24.1		20.2	19.7
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.5	10.8		0.1			2.2		2.2	1.0
Delay (s)	13.8	28.0		27.5			26.3		22.4	20.7
Level of Service	B	C		C			C		C	C
Approach Delay (s)	25.1			27.5			26.3	0.0		21.6
Approach LOS	C			C			C	A		C

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	17.7
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	89	291	1	0	9	15	26	0	70	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.9	4.9		4.6			4.0		4.6	4.6
Lane Util. Factor	1.00	0.88		1.00			1.00		1.00	1.00
Frt	1.00	0.85		0.86			1.00		1.00	1.00
Flt Protected	0.95	1.00		1.00			0.98		0.95	1.00
Satd. Flow (prot)	1770	2787		1611			1830		1770	1863
Flt Permitted	0.95	1.00		1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787		1611			1830		1410	1863
Peak-hour factor, PHF	0.86	0.86	0.86	0.63	0.63	0.51	0.51	0.92	0.64	0.64
Adj. Flow (vph)	103	338	1	0	14	29	51	0	109	184
RTOR Reduction (vph)	0	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	103	339	0	0	0	0	80	0	109	184
Turn Type		Prot				Split			Perm	
Protected Phases	2	2		3		1	1	4		4
Permitted Phases									4	
Actuated Green, G (s)	12.3	12.3		1.0			5.4		8.1	8.1
Effective Green, g (s)	12.3	12.3		1.0			5.4		8.1	8.1
Actuated g/C Ratio	0.27	0.27		0.02			0.12		0.18	0.18
Clearance Time (s)	4.9	4.9		4.6			4.0		4.6	4.6
Vehicle Extension (s)	4.0	4.0		4.0			2.0		4.0	4.0
Lane Grp Cap (vph)	485	763		36			220		254	336
v/s Ratio Prot	0.06	c0.12		c0.00			c0.04			c0.10
v/s Ratio Perm									0.08	
v/c Ratio	0.21	0.44		0.01			0.36		0.43	0.55
Uniform Delay, d1	12.6	13.5		21.5			18.2		16.3	16.7
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.3	0.6		0.1			0.4		1.6	2.3
Delay (s)	12.9	14.0		21.6			18.5		17.9	19.0
Level of Service	B	B		C			B		B	B
Approach Delay (s)	13.8			21.6			18.5	0.0		18.6
Approach LOS	B			C			B	A		B

Intersection Summary

HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	18.1
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
56: Divisadero St & Stanislaus St

4/9/2012

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	NEL
Right Turn Channelized											
Volume (veh/h)	108	299	17	72	94	50	110	36	246	11	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	325	18	78	102	54	120	39	267	12	0
Approach Volume (veh/h)		461			235				438		0
Crossing Volume (veh/h)		198			543				442		442
High Capacity (veh/h)		1186			902				977		977
High v/c (veh/h)		0.39			0.26				0.45		0.00
Low Capacity (veh/h)		981			726				793		793
Low v/c (veh/h)		0.47			0.32				0.55		0.00

Intersection Summary				
Maximum v/c High	0.45			
Maximum v/c Low	0.55			
Intersection Capacity Utilization	45.6%	ICU Level of Service		A

HCM Unsignalized Intersection Capacity Analysis
56: Divisadero St & P St

4/9/2012

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	NEL
Right Turn Channelized											
Volume (veh/h)	220	249	7	68	159	110	104	117	729	13	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	239	271	8	74	173	120	113	127	792	14	0
Approach Volume (veh/h)		517			366				1047		0
Crossing Volume (veh/h)		187			1272#				510		510
High Capacity (veh/h)		1196			497				926		926
High v/c (veh/h)		0.43			0.74				1.13		0.00
Low Capacity (veh/h)		990			376				748		748
Low v/c (veh/h)		0.52			0.97				1.40		0.00

Intersection Summary			
Maximum v/c High	1.13		
Maximum v/c Low	1.40		
Intersection Capacity Utilization	81.5%	ICU Level of Service	D

Crossing flow exceeds 1200, method is not applicable

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	361	31	0	130	0	0	0	0	65	795	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5					4.9	4.9	4.9
Lane Util. Factor		0.95			0.95					1.00	0.95	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3497			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3497			3539					1770	3539	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	430	37	0	151	0	0	0	0	84	1032	144
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	0	455	0	0	151	0	0	0	0	84	1032	77
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		25.5			25.5					20.1	20.1	20.1
Effective Green, g (s)		25.5			25.5					20.1	20.1	20.1
Actuated g/C Ratio		0.46			0.46					0.37	0.37	0.37
Clearance Time (s)		4.5			4.5					4.9	4.9	4.9
Vehicle Extension (s)		5.0			5.0					5.0	5.0	5.0
Lane Grp Cap (vph)		1621			1641					647	1293	579
v/s Ratio Prot		c0.13			0.04					0.05	c0.29	
v/s Ratio Perm												0.05
v/c Ratio		0.28			0.09					0.13	0.80	0.13
Uniform Delay, d1		9.1			8.3					11.6	15.6	11.6
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.1					0.2	4.1	0.2
Delay (s)		9.3			8.3					11.8	19.7	11.9
Level of Service		A			A					B	B	B
Approach Delay (s)		9.3			8.3			0.0			18.3	
Approach LOS		A			A			A			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	379	16	0	276	0	0	0	0	92	357	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5					4.9	4.9	4.9
Lane Util. Factor		0.95			0.95					1.00	0.95	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3518			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3518			3539					1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	436	18	0	325	0	0	0	0	107	415	91
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	0	449	0	0	325	0	0	0	0	107	415	33
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		25.5			25.5					20.1	20.1	20.1
Effective Green, g (s)		25.5			25.5					20.1	20.1	20.1
Actuated g/C Ratio		0.46			0.46					0.37	0.37	0.37
Clearance Time (s)		4.5			4.5					4.9	4.9	4.9
Vehicle Extension (s)		5.0			5.0					5.0	5.0	5.0
Lane Grp Cap (vph)		1631			1641					647	1293	579
v/s Ratio Prot		c0.13			0.09					0.06	c0.12	
v/s Ratio Perm												0.02
v/c Ratio		0.28			0.20					0.17	0.32	0.06
Uniform Delay, d1		9.1			8.7					11.8	12.5	11.3
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.1					0.3	0.3	0.1
Delay (s)		9.3			8.8					12.0	12.8	11.4
Level of Service		A			A					B	B	B
Approach Delay (s)		9.3			8.8			0.0			12.5	
Approach LOS		A			A			A			B	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↰	
Volume (veh/h)	5	745	68	3	5	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.64	0.64	0.75	0.75	0.50	0.50
Hourly flow rate (vph)	8	1164	91	4	10	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	95				1272	93
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	95				1272	93
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	99
cM capacity (veh/h)	1499				184	965

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1172	95	16
Volume Left	8	0	10
Volume Right	0	4	6
cSH	1499	1700	264
Volume to Capacity	0.01	0.06	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.2	0.0	19.5
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	19.5
Approach LOS			C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	3	362	366	4	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.71	0.71	0.33	0.33
Hourly flow rate (vph)	3	402	515	6	6	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	521				927	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	521				927	518
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1045				297	557

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	406	521	12
Volume Left	3	0	6
Volume Right	0	6	6
cSH	1045	1700	387
Volume to Capacity	0.00	0.31	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.1	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	14.6
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	294	128	7	168	15	2	11	14	13	58	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.92		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3534	1583		3492		1770	1704		1770	1812	
Flt Permitted		0.95	1.00		0.94		0.69	1.00		0.74	1.00	
Satd. Flow (perm)		3348	1583		3284		1285	1704		1374	1812	
Peak-hour factor, PHF	0.64	0.64	0.64	0.91	0.91	0.91	0.84	0.84	0.84	0.68	0.68	0.68
Adj. Flow (vph)	14	459	200	8	185	16	2	13	17	19	85	19
RTOR Reduction (vph)	0	0	87	0	7	0	0	13	0	0	14	0
Lane Group Flow (vph)	0	473	113	0	202	0	2	17	0	19	90	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		31.9	31.9		31.9		13.7	13.7		13.7	13.7	
Effective Green, g (s)		31.9	31.9		31.9		13.7	13.7		13.7	13.7	
Actuated g/C Ratio		0.57	0.57		0.57		0.24	0.24		0.24	0.24	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1894	895		1857		312	414		334	440	
v/s Ratio Prot								0.01			c0.05	
v/s Ratio Perm		c0.14	0.07		0.06		0.00			0.01		
v/c Ratio		0.25	0.13		0.11		0.01	0.04		0.06	0.20	
Uniform Delay, d1		6.2	5.7		5.7		16.2	16.3		16.4	17.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.0	0.0		0.0	0.1	
Delay (s)		6.2	5.8		5.7		16.2	16.3		16.4	17.1	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		6.1			5.7			16.3			17.0	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	231	33	5	339	30	18	20	22	15	20	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.92		1.00	0.94	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3529	1583		3494		1770	1717		1770	1742	
Flt Permitted		0.92	1.00		0.95		0.72	1.00		0.73	1.00	
Satd. Flow (perm)		3268	1583		3327		1348	1717		1357	1742	
Peak-hour factor, PHF	0.87	0.87	0.87	0.79	0.79	0.79	0.94	0.94	0.94	0.69	0.69	0.69
Adj. Flow (vph)	17	266	38	6	429	38	19	21	23	22	29	22
RTOR Reduction (vph)	0	0	15	0	8	0	0	19	0	0	18	0
Lane Group Flow (vph)	0	283	23	0	465	0	19	25	0	22	33	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		32.6	32.6		32.6		9.4	9.4		9.4	9.4	
Effective Green, g (s)		32.6	32.6		32.6		9.4	9.4		9.4	9.4	
Actuated g/C Ratio		0.62	0.62		0.62		0.18	0.18		0.18	0.18	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		2018	977		2054		240	306		242	310	
v/s Ratio Prot								0.01			c0.02	
v/s Ratio Perm		0.09	0.01		c0.14		0.01			0.02		
v/c Ratio		0.14	0.02		0.23		0.08	0.08		0.09	0.11	
Uniform Delay, d1		4.2	3.9		4.5		18.1	18.1		18.1	18.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.1	0.0		0.1	0.1	
Delay (s)		4.2	3.9		4.5		18.1	18.1		18.2	18.2	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		4.2			4.5			18.1			18.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	716	62	7	37	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.64	0.64	0.76	0.76	0.65	0.65
Hourly flow rate (vph)	8	1119	82	9	57	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	91				1221	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	91				1221	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				71	99
cM capacity (veh/h)	1504				198	973

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1127	91	66
Volume Left	8	0	57
Volume Right	0	9	9
cSH	1504	1700	222
Volume to Capacity	0.01	0.05	0.30
Queue Length 95th (ft)	0	0	30
Control Delay (s)	0.2	0.0	27.9
Lane LOS	A		D
Approach Delay (s)	0.2	0.0	27.9
Approach LOS			D

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	354	355	24	11	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.71	0.71	0.72	0.72
Hourly flow rate (vph)	5	389	500	34	15	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	534				917	517
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	534				917	517
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	96
cM capacity (veh/h)	1034				300	558

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	395	534	38
Volume Left	5	0	15
Volume Right	0	34	22
cSH	1034	1700	414
Volume to Capacity	0.01	0.31	0.09
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.2	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	14.6
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	43	29	182	13	4	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.9		4.9	4.9
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3504		1770	1863
Flt Permitted	1.00	1.00	1.00		0.67	1.00
Satd. Flow (perm)	1863	1583	3504		1242	1863
Peak-hour factor, PHF	0.82	0.82	0.86	0.86	0.92	0.92
Adj. Flow (vph)	52	35	212	15	4	134
RTOR Reduction (vph)	0	35	5	0	0	0
Lane Group Flow (vph)	52	0	222	0	4	134
Turn Type		NA			Perm	
Protected Phases			2			2
Permitted Phases	4				2	
Actuated Green, G (s)	1.5	0.0	6.0		6.0	6.0
Effective Green, g (s)	1.5	0.0	6.0		6.0	6.0
Actuated g/C Ratio	0.09	0.00	0.36		0.36	0.36
Clearance Time (s)	4.5		4.9		4.9	4.9
Vehicle Extension (s)	5.0		4.0		4.0	4.0
Lane Grp Cap (vph)	165	0	1244		441	661
v/s Ratio Prot			0.06			c0.07
v/s Ratio Perm	c0.03				0.00	
v/c Ratio	0.32	0.00	0.18		0.01	0.20
Uniform Delay, d1	7.2	8.4	3.8		3.5	3.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	0.0	0.1		0.0	0.2
Delay (s)	9.5	8.4	3.8		3.5	4.0
Level of Service	A	A	A		A	A
Approach Delay (s)	9.1		3.8			4.0
Approach LOS	A		A			A

Intersection Summary

HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	16.9	Sum of lost time (s)	9.4
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	62	15	124	9	16	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5		4.9		4.9	4.9
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.97		0.99		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1744		3504		1770	1863
Flt Permitted	0.95		1.00		0.68	1.00
Satd. Flow (perm)	1729		3504		1263	1863
Peak-hour factor, PHF	0.77	0.77	0.88	0.88	0.90	0.90
Adj. Flow (vph)	81	19	141	10	18	158
RTOR Reduction (vph)	15	0	6	0	0	0
Lane Group Flow (vph)	85	0	145	0	18	158
Turn Type					Perm	
Protected Phases			2			2
Permitted Phases	4				2	
Actuated Green, G (s)	3.8		5.9		5.9	5.9
Effective Green, g (s)	3.8		5.9		5.9	5.9
Actuated g/C Ratio	0.20		0.31		0.31	0.31
Clearance Time (s)	4.5		4.9		4.9	4.9
Vehicle Extension (s)	5.0		4.0		4.0	4.0
Lane Grp Cap (vph)	344		1082		390	575
v/s Ratio Prot			0.04			c0.08
v/s Ratio Perm	c0.05				0.01	
v/c Ratio	0.25		0.13		0.05	0.27
Uniform Delay, d1	6.4		4.8		4.6	5.0
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.8		0.1		0.1	0.4
Delay (s)	7.2		4.8		4.7	5.3
Level of Service	A		A		A	A
Approach Delay (s)	7.2		4.8			5.3
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	19.1	Sum of lost time (s)	9.4
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL
Lane Configurations												
Volume (vph)	21	4	4	10	241	1	9	65	0	9	3	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6	4.6				4.6	4.6	4.2	4.6
Lane Util. Factor	1.00			0.95	0.95				0.95	1.00	1.00	0.97
Frt	0.98			0.87	0.85				1.00	0.85	0.86	0.91
Flt Protected	1.00			1.00	1.00				0.95	1.00	1.00	0.98
Satd. Flow (prot)	1821			1531	1504				3362	1583	1611	3221
Flt Permitted	1.00			0.99	1.00				0.95	1.00	1.00	0.46
Satd. Flow (perm)	1821			1525	1504				3362	1583	1611	1494
Peak-hour factor, PHF	0.84	0.84	0.83	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.75	0.71
Adj. Flow (vph)	25	5	5	12	290	1	10	76	0	10	4	625
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	0	9	4	0
Lane Group Flow (vph)	27	0	0	156	152	0	0	0	86	1	0	1594
Turn Type			Perm		Perm		Perm	Perm		Perm	custom	
Protected Phases	6			6					4		8	5
Permitted Phases			6		6		4	4		4		2
Actuated Green, G (s)	20.2			20.2	20.2				6.4	6.4	6.8	18.2
Effective Green, g (s)	20.2			20.2	20.2				6.4	6.4	6.8	18.2
Actuated g/C Ratio	0.34			0.34	0.34				0.11	0.11	0.12	0.31
Clearance Time (s)	4.6			4.6	4.6				4.6	4.6	4.2	4.6
Vehicle Extension (s)	5.0			5.0	5.0				4.0	4.0	2.0	5.0
Lane Grp Cap (vph)	628			526	518				367	173	187	1000
v/s Ratio Prot	0.01										0.00	c0.49
v/s Ratio Perm				c0.10	0.10				0.03	0.00		
v/c Ratio	0.04			0.30	0.29				0.23	0.01	0.00	1.91dr
Uniform Delay, d1	12.8			14.0	14.0				23.9	23.3	22.9	20.2
Progression Factor	1.00			1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1			0.7	0.7				0.4	0.0	0.0	272.0
Delay (s)	12.8			14.7	14.7				24.3	23.3	22.9	292.2
Level of Service	B			B	B				C	C	C	F
Approach Delay (s)	12.8			14.7					24.2			292.2
Approach LOS	B			B					C			F

Intersection Summary

HCM Average Control Delay	232.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	13.8
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	687	1
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.71	0.71
Adj. Flow (vph)	968	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBT	EBR	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL2	SEL
Lane Configurations												
Volume (vph)	31	9	7	511	2	4	302	0	19	6	1	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6		4.6	4.6				4.6	4.6	4.2		4.6
Lane Util. Factor	1.00		0.95	0.95				0.95	1.00	1.00		0.97
Frt	0.97		0.85	0.85				1.00	0.85	0.86		0.90
Flt Protected	1.00		1.00	1.00				0.95	1.00	1.00		0.98
Satd. Flow (prot)	1804		1511	1504				3362	1583	1611		3203
Flt Permitted	1.00		1.00	1.00				0.95	1.00	1.00		0.95
Satd. Flow (perm)	1804		1511	1504				3362	1583	1611		3112
Peak-hour factor, PHF	0.85	0.85	0.78	0.78	0.78	0.71	0.71	0.71	0.71	0.50	0.95	0.95
Adj. Flow (vph)	36	11	9	655	3	6	425	0	27	12	1	171
RTOR Reduction (vph)	8	0	0	1	0	0	0	0	23	10	0	0
Lane Group Flow (vph)	39	0	337	329	0	0	0	431	4	2	0	499
Turn Type				custom		Perm	Perm		Perm	custom	Perm	
Protected Phases	6		6	2				4		8		5
Permitted Phases				6		4	4		4		5	2
Actuated Green, G (s)	21.6		21.6	34.0				12.0	12.0	12.4		30.4
Effective Green, g (s)	21.6		21.6	34.0				12.0	12.0	12.4		30.4
Actuated g/C Ratio	0.26		0.26	0.41				0.15	0.15	0.15		0.37
Clearance Time (s)	4.6		4.6	4.6				4.6	4.6	4.2		4.6
Vehicle Extension (s)	5.0		5.0	5.0				4.0	4.0	2.0		5.0
Lane Grp Cap (vph)	473		396	621				490	231	242		1168
v/s Ratio Prot	0.02		c0.22	c0.08						0.00		c0.09
v/s Ratio Perm				0.14				0.13	0.00			0.06
v/c Ratio	0.08		0.85	0.53				1.67dl	0.02	0.01		0.43
Uniform Delay, d1	22.9		28.9	18.2				34.5	30.1	29.8		22.7
Progression Factor	1.00		1.00	1.00				1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2		17.3	1.6				16.8	0.0	0.0		0.5
Delay (s)	23.1		46.2	19.8				51.3	30.2	29.8		23.2
Level of Service	C		D	B				D	C	C		C
Approach Delay (s)	23.1		33.1					50.0				23.2
Approach LOS	C		C					D				C

Intersection Summary

HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	18.4
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	310	1
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	326	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	17	385	67	10	245	16	36	56	14	10	24	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.97		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3532	1583		3501		1770	1805		1770	1807	
Flt Permitted		0.94	1.00		0.94		0.73	1.00		0.71	1.00	
Satd. Flow (perm)		3321	1583		3290		1362	1805		1316	1807	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.90	0.90	0.90	0.75	0.75	0.75
Adj. Flow (vph)	18	418	73	10	255	17	40	62	16	13	32	8
RTOR Reduction (vph)	0	0	38	0	9	0	0	12	0	0	6	0
Lane Group Flow (vph)	0	436	35	0	273	0	40	66	0	13	34	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4			2			2		
Actuated Green, G (s)		15.9	15.9		15.9		7.8	7.8		7.8	7.8	
Effective Green, g (s)		15.9	15.9		15.9		7.8	7.8		7.8	7.8	
Actuated g/C Ratio		0.48	0.48		0.48		0.24	0.24		0.24	0.24	
Clearance Time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1605	765		1590		323	428		312	428	
v/s Ratio Prot								c0.04			0.02	
v/s Ratio Perm		c0.13	0.02		0.08		0.03			0.01		
v/c Ratio		0.27	0.05		0.17		0.12	0.15		0.04	0.08	
Uniform Delay, d1		5.1	4.5		4.8		9.9	9.9		9.7	9.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.1	0.1		0.0	0.0	
Delay (s)		5.1	4.5		4.8		9.9	10.0		9.7	9.8	
Level of Service		A	A		A		A	A		A	A	
Approach Delay (s)		5.0			4.8			10.0			9.8	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	32.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	22	225	29	5	401	54	26	22	19	81	91	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.98		1.00	0.93		1.00	0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3524	1583		3475		1770	1734		1770	1842	
Flt Permitted		0.90	1.00		0.95		0.68	1.00		0.72	1.00	
Satd. Flow (perm)		3193	1583		3312		1263	1734		1349	1842	
Peak-hour factor, PHF	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	25	259	33	5	441	59	31	27	23	101	114	9
RTOR Reduction (vph)	0	0	16	0	19	0	0	17	0	0	6	0
Lane Group Flow (vph)	0	284	17	0	486	0	31	33	0	101	117	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4			2			2		
Actuated Green, G (s)		23.3	23.3		23.3		12.7	12.7		12.7	12.7	
Effective Green, g (s)		23.3	23.3		23.3		12.7	12.7		12.7	12.7	
Actuated g/C Ratio		0.52	0.52		0.52		0.28	0.28		0.28	0.28	
Clearance Time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1646	816		1707		355	487		379	518	
v/s Ratio Prot								0.02			0.06	
v/s Ratio Perm		0.09	0.01		c0.15		0.02			c0.07		
v/c Ratio		0.17	0.02		0.28		0.09	0.07		0.27	0.22	
Uniform Delay, d1		5.8	5.4		6.2		12.0	11.9		12.6	12.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.0	0.0		0.1	0.1	
Delay (s)		5.8	5.4		6.3		12.0	11.9		12.8	12.6	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		5.8			6.3			12.0			12.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	45.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	472	18	8	134	0	9	0	16	255	505	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	0.95	
Frt		0.99			1.00		1.00		0.85	1.00	0.97	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3519			3529		1770		1583	1770	3420	
Flt Permitted		1.00			0.92		0.30		1.00	0.95	1.00	
Satd. Flow (perm)		3519			3260		568		1583	1770	3420	
Peak-hour factor, PHF	0.70	0.70	0.70	0.87	0.87	0.87	0.78	0.78	0.78	0.90	0.90	0.90
Adj. Flow (vph)	0	674	26	9	154	0	12	0	21	283	561	162
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	12	0	45	0
Lane Group Flow (vph)	0	695	0	0	163	0	12	0	9	283	678	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		25.0			25.0		24.2		24.2	24.2	24.2	
Effective Green, g (s)		25.0			25.0		24.2		24.2	24.2	24.2	
Actuated g/C Ratio		0.43			0.43		0.42		0.42	0.42	0.42	
Clearance Time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1512			1400		236		658	736	1422	
v/s Ratio Prot		c0.20							0.01		c0.20	
v/s Ratio Perm					0.05		0.02			0.16		
v/c Ratio		0.46			0.12		0.05		0.01	0.38	0.48	
Uniform Delay, d1		11.8			10.0		10.1		10.0	11.8	12.4	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.0		0.0		0.0	0.1	0.1	
Delay (s)		11.9			10.0		10.2		10.0	11.9	12.5	
Level of Service		B			A		B		A	B	B	
Approach Delay (s)		11.9			10.0			10.1			12.3	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	237	22	7	360	0	12	0	30	122	221	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	0.95	
Frt		0.99			1.00		1.00		0.85	1.00	0.96	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3494			3536		1770		1583	1770	3402	
Flt Permitted		1.00			0.95		0.56		1.00	0.95	1.00	
Satd. Flow (perm)		3494			3359		1038		1583	1770	3402	
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	0	249	23	8	396	0	14	0	34	131	238	83
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	20	0	49	0
Lane Group Flow (vph)	0	261	0	0	404	0	14	0	14	131	272	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		25.0			25.0		24.0		24.0	24.0	24.0	
Effective Green, g (s)		25.0			25.0		24.0		24.0	24.0	24.0	
Actuated g/C Ratio		0.43			0.43		0.41		0.41	0.41	0.41	
Clearance Time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1506			1448		430		655	732	1408	
v/s Ratio Prot		0.07							0.01		c0.08	
v/s Ratio Perm					c0.12		0.01			0.07		
v/c Ratio		0.17			0.28		0.03		0.02	0.18	0.19	
Uniform Delay, d1		10.1			10.7		10.1		10.1	10.8	10.8	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.0		0.0	0.0	0.0	
Delay (s)		10.2			10.7		10.1		10.1	10.8	10.9	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		10.2			10.7			10.1			10.8	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
66: E Divisadero St & N Van Ness Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	40	465	180	6	116	43	31	157	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.96			0.96			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3390			3395			3473				
Flt Permitted		0.92			0.93			0.99				
Satd. Flow (perm)		3142			3147			3473				
Peak-hour factor, PHF	0.69	0.69	0.69	0.81	0.81	0.81	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	58	674	261	7	143	53	33	167	16	0	0	0
RTOR Reduction (vph)	0	57	0	0	29	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	936	0	0	174	0	0	206	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		25.5			25.5			22.0				
Effective Green, g (s)		25.5			25.5			22.0				
Actuated g/C Ratio		0.45			0.45			0.39				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1426			1428			1360				
v/s Ratio Prot								c0.06				
v/s Ratio Perm		c0.30			0.06							
v/c Ratio		0.66			0.12			0.15				
Uniform Delay, d1		11.9			8.9			11.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.8			0.0			0.0				
Delay (s)		12.8			8.9			11.1				
Level of Service		B			A			B				
Approach Delay (s)		12.8			8.9			11.1			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	154	221	61	9	306	105	123	537	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.98			0.96			1.00				
Flt Protected		0.98			1.00			0.99				
Satd. Flow (prot)		3405			3403			3494				
Flt Permitted		0.63			0.94			0.99				
Satd. Flow (perm)		2166			3202			3494				
Peak-hour factor, PHF	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.92	0.92	0.92
Adj. Flow (vph)	220	316	87	13	437	150	198	866	27	0	0	0
RTOR Reduction (vph)	0	21	0	0	42	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	602	0	0	558	0	0	1088	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		25.5			25.5			23.0				
Effective Green, g (s)		25.5			25.5			23.0				
Actuated g/C Ratio		0.45			0.45			0.40				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		966			1427			1405				
v/s Ratio Prot								c0.31				
v/s Ratio Perm		c0.28			0.17							
v/c Ratio		0.62			0.39			0.77				
Uniform Delay, d1		12.2			10.6			14.8				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.9			0.1			2.5				
Delay (s)		13.1			10.7			17.3				
Level of Service		B			B			B				
Approach Delay (s)		13.1			10.7			17.3			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	17	0	3	1	0	0	1	1099	24	24	284	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Lane Util. Factor	1.00	1.00			1.00			0.95	1.00		0.95	
Frt	1.00	0.85			1.00			1.00	0.85		1.00	
Flt Protected	0.95	1.00			0.95			1.00	1.00		1.00	
Satd. Flow (prot)	1770	1583			1770			3539	1583		3524	
Flt Permitted	0.76	1.00			0.76			0.95	1.00		0.85	
Satd. Flow (perm)	1407	1583			1407			3380	1583		3004	
Peak-hour factor, PHF	0.77	0.77	0.77	0.25	0.25	0.25	0.85	0.85	0.85	0.90	0.90	0.90
Adj. Flow (vph)	22	0	4	4	0	0	1	1293	28	27	316	1
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	22	1	0	0	4	0	0	1294	21	0	344	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	8.0	8.0			8.0			34.1	34.1		34.1	
Effective Green, g (s)	8.0	8.0			8.0			34.1	34.1		34.1	
Actuated g/C Ratio	0.16	0.16			0.16			0.67	0.67		0.67	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	221	249			221			2264	1061		2013	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.02				0.00			c0.38	0.01		0.11	
v/c Ratio	0.10	0.00			0.02			0.57	0.02		0.17	
Uniform Delay, d1	18.4	18.1			18.1			4.5	2.8		3.1	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.0			0.1			0.4	0.0		0.1	
Delay (s)	18.8	18.1			18.2			4.9	2.8		3.2	
Level of Service	B	B			B			A	A		A	
Approach Delay (s)		18.7			18.2			4.9			3.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	8.8
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	24	0	2	0	1	0	1	468	17	16	802	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Lane Util. Factor	1.00	1.00			1.00			0.95	1.00		0.95	
Frt	1.00	0.85			1.00			1.00	0.85		1.00	
Flt Protected	0.95	1.00			1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1770	1583			1863			3539	1583		3535	
Flt Permitted	0.76	1.00			1.00			0.95	1.00		0.94	
Satd. Flow (perm)	1407	1583			1863			3376	1583		3341	
Peak-hour factor, PHF	0.90	0.90	0.90	0.25	0.25	0.25	0.97	0.97	0.97	0.79	0.79	0.79
Adj. Flow (vph)	27	0	2	0	4	0	1	482	18	20	1015	1
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	6	0	0	0
Lane Group Flow (vph)	27	0	0	0	4	0	0	483	12	0	1036	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	7.4	7.4			7.4			31.1	31.1		31.1	
Effective Green, g (s)	7.4	7.4			7.4			31.1	31.1		31.1	
Actuated g/C Ratio	0.16	0.16			0.16			0.66	0.66		0.66	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	220	248			291			2220	1041		2197	
v/s Ratio Prot		0.00			0.00							
v/s Ratio Perm	c0.02							0.14	0.01		c0.31	
v/c Ratio	0.12	0.00			0.01			0.22	0.01		0.47	
Uniform Delay, d1	17.2	16.8			16.9			3.2	2.8		4.0	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.0			0.0			0.1	0.0		0.2	
Delay (s)	17.7	16.8			16.9			3.3	2.8		4.2	
Level of Service	B	B			B			A	A		A	
Approach Delay (s)		17.6			16.9			3.3			4.2	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	4.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	8.8
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	52	27	33	35	0	0	0	0	81	1009	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2						4.9	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1777			1818						5038	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1777			1489						5038	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79
Adj. Flow (vph)	0	60	31	37	39	0	0	0	0	103	1277	54
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	69	0	0	76	0	0	0	0	0	1428	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		6.6			6.6						23.2	
Effective Green, g (s)		6.6			6.6						23.2	
Actuated g/C Ratio		0.17			0.17						0.60	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		301			253						3005	
v/s Ratio Prot		0.04									c0.28	
v/s Ratio Perm					c0.05							
v/c Ratio		0.23			0.30						0.48	
Uniform Delay, d1		14.0			14.1						4.4	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.5			0.9						0.2	
Delay (s)		14.5			15.0						4.7	
Level of Service		B			B						A	
Approach Delay (s)		14.5			15.0			0.0			4.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	38.9	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	64	38	39	59	0	0	0	0	48	584	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2						4.9	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1769			1827						5011	
Flt Permitted		1.00			0.81						1.00	
Satd. Flow (perm)		1769			1518						5011	
Peak-hour factor, PHF	0.77	0.77	0.77	0.79	0.79	0.79	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	83	49	49	75	0	0	0	0	54	656	57
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	93	0	0	124	0	0	0	0	0	752	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		7.5			7.5						20.8	
Effective Green, g (s)		7.5			7.5						20.8	
Actuated g/C Ratio		0.20			0.20						0.56	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		355			304						2787	
v/s Ratio Prot		0.05									c0.15	
v/s Ratio Perm					c0.08							
v/c Ratio		0.26			0.41						0.27	
Uniform Delay, d1		12.6			13.0						4.3	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.5			1.2						0.1	
Delay (s)		13.2			14.2						4.4	
Level of Service		B			B						A	
Approach Delay (s)		13.2			14.2			0.0			4.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	90	0	0	50	49	17	415	23	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2			4.9				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			0.99				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1834			1738			5038				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1587			1738			5038				
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	53	115	0	0	62	61	20	494	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	46	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	168	0	0	77	0	0	530	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		7.3			7.3			13.0				
Effective Green, g (s)		7.3			7.3			13.0				
Actuated g/C Ratio		0.25			0.25			0.44				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		394			432			2228				
v/s Ratio Prot					0.04			c0.11				
v/s Ratio Perm		c0.11										
v/c Ratio		0.43			0.18			0.24				
Uniform Delay, d1		9.3			8.7			5.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.0			0.3			0.0				
Delay (s)		10.3			9.0			5.1				
Level of Service		B			A			A				
Approach Delay (s)		10.3			9.0			5.1			0.0	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	29.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	64	0	0	78	109	20	1037	24	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2			4.9				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1822			1716			5064				
Flt Permitted		0.75			1.00			1.00				
Satd. Flow (perm)		1405			1716			5064				
Peak-hour factor, PHF	0.72	0.72	0.72	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	71	89	0	0	92	128	24	1220	28	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	160	0	0	204	0	0	1268	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		8.5			8.5			19.8				
Effective Green, g (s)		8.5			8.5			19.8				
Actuated g/C Ratio		0.23			0.23			0.53				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		319			390			2681				
v/s Ratio Prot					c0.12			c0.25				
v/s Ratio Perm		0.11										
v/c Ratio		0.50			0.52			0.47				
Uniform Delay, d1		12.6			12.7			5.5				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.7			1.6			0.0				
Delay (s)		14.3			14.3			5.6				
Level of Service		B			B			A				
Approach Delay (s)		14.3			14.3			5.6			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	195	163	0	0	0	0	0	0	343	836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.93									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3298									3488	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3298									3488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	0	212	177	0	0	0	0	0	0	429	1045	0
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	350	0	0	0	0	0	0	0	0	1417	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		15.5									30.5	
Effective Green, g (s)		15.5									30.5	
Actuated g/C Ratio		0.28									0.56	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		933									1941	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.37									0.73	
Uniform Delay, d1		15.8									9.1	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.8									1.9	
Delay (s)		16.6									11.0	
Level of Service		B									B	
Approach Delay (s)		16.6			0.0			0.0			11.0	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.8
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	219	122	0	0	0	0	0	0	355	316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.95									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3350									3448	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3350									3448	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	261	145	0	0	0	0	0	0	413	367	0
RTOR Reduction (vph)	0	97	0	0	0	0	0	0	0	0	224	0
Lane Group Flow (vph)	0	309	0	0	0	0	0	0	0	0	556	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		14.1									19.3	
Effective Green, g (s)		14.1									19.3	
Actuated g/C Ratio		0.33									0.46	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		1119									1577	
v/s Ratio Prot		c0.09										
v/s Ratio Perm											0.16	
v/c Ratio		0.28									0.35	
Uniform Delay, d1		10.3									7.4	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.4									0.3	
Delay (s)		10.7									7.8	
Level of Service		B									A	
Approach Delay (s)		10.7			0.0			0.0			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	8.8
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	198	339	0	0	167	114	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6	4.6					
Lane Util. Factor	1.00	1.00			0.95	1.00					
Frt	1.00	1.00			1.00	0.85					
Flt Protected	0.95	0.95			1.00	1.00					
Satd. Flow (prot)	1770	1770			3539	1583					
Flt Permitted	0.95	0.95			1.00	1.00					
Satd. Flow (perm)	1770	1770			3539	1583					
Peak-hour factor, PHF	0.89	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	381	0	0	190	130	0	0	0	0	0
RTOR Reduction (vph)	139	0	0	0	0	93	0	0	0	0	0
Lane Group Flow (vph)	83	381	0	0	190	37	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	9.9	9.9			7.5	7.5					
Effective Green, g (s)	9.9	9.9			7.5	7.5					
Actuated g/C Ratio	0.37	0.37			0.28	0.28					
Clearance Time (s)	4.6	4.6			4.6	4.6					
Vehicle Extension (s)	5.0	5.0			4.5	4.5					
Lane Grp Cap (vph)	659	659			998	446					
v/s Ratio Prot	0.05	c0.22			c0.05						
v/s Ratio Perm						0.02					
v/c Ratio	0.13	0.58			0.19	0.08					
Uniform Delay, d1	5.5	6.7			7.2	7.0					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.2	2.0			0.2	0.1					
Delay (s)	5.7	8.6			7.4	7.2					
Level of Service	A	A			A	A					
Approach Delay (s)		7.6			7.3			0.0		0.0	
Approach LOS		A			A			A		A	

Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	26.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	188	360	0	0	413	392	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6	4.6					
Lane Util. Factor	1.00	1.00			0.95	1.00					
Frt	1.00	1.00			1.00	0.85					
Flt Protected	0.95	0.95			1.00	1.00					
Satd. Flow (prot)	1770	1770			3539	1583					
Flt Permitted	0.95	0.95			1.00	1.00					
Satd. Flow (perm)	1770	1770			3539	1583					
Peak-hour factor, PHF	0.85	0.85	0.85	0.70	0.70	0.70	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	424	0	0	590	560	0	0	0	0	0
RTOR Reduction (vph)	130	0	0	0	0	121	0	0	0	0	0
Lane Group Flow (vph)	91	424	0	0	590	439	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	14.4	14.4			18.4	18.4					
Effective Green, g (s)	14.4	14.4			18.4	18.4					
Actuated g/C Ratio	0.34	0.34			0.44	0.44					
Clearance Time (s)	4.6	4.6			4.6	4.6					
Vehicle Extension (s)	5.0	5.0			4.5	4.5					
Lane Grp Cap (vph)	607	607			1550	694					
v/s Ratio Prot	0.05	c0.24			0.17						
v/s Ratio Perm						c0.28					
v/c Ratio	0.15	0.70			0.38	0.63					
Uniform Delay, d1	9.6	11.9			8.0	9.2					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.2	4.4			0.3	2.4					
Delay (s)	9.8	16.4			8.2	11.5					
Level of Service	A	B			A	B					
Approach Delay (s)		14.1			9.8			0.0		0.0	
Approach LOS		B			A			A		A	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	277	563	4	40	0	0	0	0	0	651	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.7	3.7		3.7						4.1	
Lane Util. Factor		1.00	1.00		1.00						0.95	
Frt		1.00	0.85		1.00						0.98	
Flt Protected		1.00	1.00		1.00						1.00	
Satd. Flow (prot)		1863	1583		1854						3451	
Flt Permitted		1.00	1.00		0.97						1.00	
Satd. Flow (perm)		1863	1583		1810						3451	
Peak-hour factor, PHF	0.82	0.82	0.82	0.50	0.50	0.50	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	338	687	8	80	0	0	0	0	0	748	149
RTOR Reduction (vph)	0	0	76	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	338	611	0	88	0	0	0	0	0	869	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		26.2	26.2		26.2						25.1	
Effective Green, g (s)		26.2	26.2		26.2						25.1	
Actuated g/C Ratio		0.44	0.44		0.44						0.42	
Clearance Time (s)		3.7	3.7		3.7						4.1	
Vehicle Extension (s)		5.0	5.0		4.8						4.6	
Lane Grp Cap (vph)		826	702		802						1466	
v/s Ratio Prot		0.18									c0.25	
v/s Ratio Perm			c0.39		0.05							
v/c Ratio		0.41	0.87		0.11						0.59	
Uniform Delay, d1		11.2	14.9		9.6						13.1	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		0.7	12.1		0.1						0.9	
Delay (s)		11.9	27.0		9.7						14.0	
Level of Service		B	C		A						B	
Approach Delay (s)		22.0			9.7			0.0			14.0	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	7.8
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	327	175	7	78	0	0	0	0	0	500	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.7	3.7		3.7						4.1	
Lane Util. Factor		1.00	1.00		1.00						0.95	
Frt		1.00	0.85		1.00						0.97	
Flt Protected		1.00	1.00		1.00						1.00	
Satd. Flow (prot)		1863	1583		1855						3437	
Flt Permitted		1.00	1.00		0.97						1.00	
Satd. Flow (perm)		1863	1583		1805						3437	
Peak-hour factor, PHF	0.96	0.96	0.96	0.70	0.70	0.70	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	341	182	10	111	0	0	0	0	0	610	146
RTOR Reduction (vph)	0	0	113	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	341	69	0	121	0	0	0	0	0	722	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		17.1	17.1		17.1						20.0	
Effective Green, g (s)		17.1	17.1		17.1						20.0	
Actuated g/C Ratio		0.38	0.38		0.38						0.45	
Clearance Time (s)		3.7	3.7		3.7						4.1	
Vehicle Extension (s)		5.0	5.0		4.8						4.6	
Lane Grp Cap (vph)		710	603		687						1531	
v/s Ratio Prot		c0.18									c0.21	
v/s Ratio Perm			0.04		0.07							
v/c Ratio		0.48	0.11		0.18						0.47	
Uniform Delay, d1		10.5	9.0		9.2						8.7	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		1.1	0.2		0.2						0.4	
Delay (s)		11.6	9.2		9.5						9.2	
Level of Service		B	A		A						A	
Approach Delay (s)		10.8			9.5			0.0			9.2	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	7.8
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	288	0	56	344	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3515		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3515		
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.92	0.92
Adj. Flow (vph)	331	0	66	405	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	331	0	0	471	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	12.3			13.8		
Effective Green, g (s)	12.3			13.8		
Actuated g/C Ratio	0.35			0.39		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	617			1374		
v/s Ratio Prot	c0.19			c0.13		
v/s Ratio Perm						
v/c Ratio	0.54			0.34		
Uniform Delay, d1	9.2			7.6		
Progression Factor	1.00			1.00		
Incremental Delay, d2	1.0			0.3		
Delay (s)	10.2			7.9		
Level of Service	B			A		
Approach Delay (s)	10.2			7.9	0.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	9.2
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	325	0	85	564	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3516		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3516		
Peak-hour factor, PHF	0.96	0.96	0.72	0.72	0.92	0.92
Adj. Flow (vph)	339	0	118	783	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	339	0	0	901	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	15.1			23.7		
Effective Green, g (s)	15.1			23.7		
Actuated g/C Ratio	0.31			0.49		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	557			1736		
v/s Ratio Prot	c0.19			c0.26		
v/s Ratio Perm						
v/c Ratio	0.61			0.52		
Uniform Delay, d1	13.9			8.3		
Progression Factor	1.00			1.00		
Incremental Delay, d2	1.9			0.5		
Delay (s)	15.9			8.8		
Level of Service	B			A		
Approach Delay (s)	15.9			8.8	0.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	283	48	89	180	0	0	0	0	149	1014	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frt		0.98		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		3463		1770	3539						4986	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3463		1770	3539						4986	
Peak-hour factor, PHF	0.90	0.90	0.90	0.77	0.77	0.77	0.92	0.92	0.92	0.79	0.79	0.79
Adj. Flow (vph)	0	314	53	116	234	0	0	0	0	189	1284	149
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	352	0	116	234	0	0	0	0	0	1610	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		17.3		7.3	28.3						26.9	
Effective Green, g (s)		17.3		7.3	28.3						26.9	
Actuated g/C Ratio		0.27		0.11	0.44						0.42	
Clearance Time (s)		4.2		3.7	4.2						4.9	
Vehicle Extension (s)		6.8		2.0	6.8						0.2	
Lane Grp Cap (vph)		932		201	1558						2086	
v/s Ratio Prot		c0.10		c0.07	0.07						c0.32	
v/s Ratio Perm												
v/c Ratio		0.38		0.58	0.15						0.77	
Uniform Delay, d1		19.1		27.0	10.8						16.1	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		0.9		2.5	0.2						1.7	
Delay (s)		20.0		29.5	10.9						17.7	
Level of Service		B		C	B						B	
Approach Delay (s)		20.0			17.1			0.0			17.7	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.8
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	450	33	83	296	0	0	0	0	171	581	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frt		0.99		1.00	1.00						0.98	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		3503		1770	3539						4933	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3503		1770	3539						4933	
Peak-hour factor, PHF	0.97	0.97	0.97	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	464	34	100	357	0	0	0	0	192	653	133
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	493	0	100	357	0	0	0	0	0	954	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		19.5		6.6	29.8						20.0	
Effective Green, g (s)		19.5		6.6	29.8						20.0	
Actuated g/C Ratio		0.33		0.11	0.51						0.34	
Clearance Time (s)		4.2		3.7	4.2						4.9	
Vehicle Extension (s)		6.8		2.0	6.8						0.2	
Lane Grp Cap (vph)		1160		198	1791						1675	
v/s Ratio Prot		c0.14		c0.06	0.10						c0.19	
v/s Ratio Perm												
v/c Ratio		0.42		0.51	0.20						0.57	
Uniform Delay, d1		15.3		24.6	8.0						15.9	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		0.9		0.7	0.2						0.3	
Delay (s)		16.2		25.4	8.2						16.2	
Level of Service		B		C	A						B	
Approach Delay (s)		16.2			11.9			0.0			16.2	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	309	0	0	245	100	23	441	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1583		5073	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5073	1583			
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	141	351	0	0	302	123	25	485	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	92	0	0	17	0	0	0
Lane Group Flow (vph)	141	351	0	0	302	31	0	510	10	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	7.3	24.2			13.2	13.2		19.6	19.6			
Effective Green, g (s)	7.3	24.2			13.2	13.2		19.6	19.6			
Actuated g/C Ratio	0.14	0.46			0.25	0.25		0.37	0.37			
Clearance Time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	2.0	5.1			5.1	5.1		0.2	0.2			
Lane Grp Cap (vph)	244	1619			883	395		1880	587			
v/s Ratio Prot	c0.08	0.10			c0.09			c0.10				
v/s Ratio Perm						0.02			0.01			
v/c Ratio	0.58	0.22			0.34	0.08		0.27	0.02			
Uniform Delay, d1	21.4	8.6			16.3	15.2		11.7	10.5			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	2.1	0.1			0.5	0.2		0.0	0.0			
Delay (s)	23.4	8.8			16.8	15.4		11.7	10.6			
Level of Service	C	A			B	B		B	B			
Approach Delay (s)		13.0			16.4			11.6			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	490	0	0	341	92	33	1181	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1583		5078	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5078	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	138	516	0	0	406	110	38	1373	24	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	80	0	0	14	0	0	0
Lane Group Flow (vph)	138	516	0	0	406	30	0	1411	10	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	8.1	28.8			17.0	17.0		23.7	23.7			
Effective Green, g (s)	8.1	28.8			17.0	17.0		23.7	23.7			
Actuated g/C Ratio	0.13	0.47			0.28	0.28		0.38	0.38			
Clearance Time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	2.0	5.1			5.1	5.1		0.2	0.2			
Lane Grp Cap (vph)	233	1655			977	437		1954	609			
v/s Ratio Prot	c0.08	0.15			c0.11			c0.28				
v/s Ratio Perm						0.02			0.01			
v/c Ratio	0.59	0.31			0.42	0.07		0.72	0.02			
Uniform Delay, d1	25.2	10.2			18.2	16.5		16.1	11.7			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	2.7	0.2			0.6	0.1		1.1	0.0			
Delay (s)	27.9	10.5			18.9	16.6		17.3	11.7			
Level of Service	C	B			B	B		B	B			
Approach Delay (s)		14.1			18.4			17.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	12.8
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	206	34	111	295	38	31	183	29	68	353	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3479		1770	3467		1770	3463	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	3479		1770	3467		1770	3463	
Peak-hour factor, PHF	0.85	0.85	0.85	0.84	0.84	0.84	0.72	0.72	0.72	0.72	0.72	0.72
Adj. Flow (vph)	65	242	40	132	351	45	43	254	40	94	490	82
RTOR Reduction (vph)	0	15	0	0	10	0	0	13	0	0	12	0
Lane Group Flow (vph)	65	267	0	132	386	0	43	281	0	94	560	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	4.5	15.5		7.5	18.5		3.9	15.7		6.6	28.4	
Effective Green, g (s)	4.5	15.5		7.5	18.5		3.9	15.7		6.6	28.4	
Actuated g/C Ratio	0.06	0.21		0.10	0.26		0.05	0.22		0.09	0.39	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	110	741		183	888		95	751		161	1357	
v/s Ratio Prot	0.04	0.08		c0.07	c0.11		0.02	0.08		c0.05	c0.16	
v/s Ratio Perm												
v/c Ratio	0.59	0.36		0.72	0.43		0.45	0.37		0.58	0.41	
Uniform Delay, d1	33.1	24.3		31.5	22.6		33.3	24.2		31.6	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.6		11.2	0.7		1.2	0.7		3.5	0.4	
Delay (s)	38.7	24.9		42.7	23.3		34.5	24.9		35.1	16.4	
Level of Service	D	C		D	C		C	C		D	B	
Approach Delay (s)		27.5			28.2			26.1			19.1	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	17.2
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	443	53	89	368	82	53	396	85	102	232	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	3443		1770	3446		1770	3405	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3483		1770	3443		1770	3446		1770	3405	
Peak-hour factor, PHF	0.94	0.94	0.94	0.85	0.85	0.85	0.77	0.77	0.77	0.88	0.88	0.88
Adj. Flow (vph)	76	471	56	105	433	96	69	514	110	116	264	89
RTOR Reduction (vph)	0	10	0	0	20	0	0	18	0	0	31	0
Lane Group Flow (vph)	76	517	0	105	509	0	69	606	0	116	322	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.6	20.7		7.4	21.5		6.3	19.2		7.6	30.5	
Effective Green, g (s)	6.6	20.7		7.4	21.5		6.3	19.2		7.6	30.5	
Actuated g/C Ratio	0.08	0.25		0.09	0.26		0.08	0.23		0.09	0.37	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	142	878		160	902		136	806		164	1265	
v/s Ratio Prot	0.04	c0.15		c0.06	0.15		0.04	c0.18		c0.07	0.09	
v/s Ratio Perm												
v/c Ratio	0.54	0.59		0.66	0.56		0.51	0.75		0.71	0.25	
Uniform Delay, d1	36.3	27.0		36.1	26.2		36.4	29.2		36.2	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	1.6		7.2	1.3		1.1	4.7		10.8	0.2	
Delay (s)	38.2	28.5		43.3	27.6		37.5	34.0		47.0	18.1	
Level of Service	D	C		D	C		D	C		D	B	
Approach Delay (s)		29.8			30.2			34.3			25.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	27.2
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	220	74	92	291	91	115	336	39	79	388	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3413		1770	3484		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3413		1770	3484		1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.80	0.80	0.80	0.78	0.78	0.78
Adj. Flow (vph)	77	265	89	100	316	99	144	420	49	101	497	103
RTOR Reduction (vph)	0	0	69	0	38	0	0	10	0	0	0	75
Lane Group Flow (vph)	77	265	20	100	377	0	144	459	0	101	497	28
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									2
Actuated Green, G (s)	5.8	14.5	14.5	6.4	15.1		7.4	17.9		6.5	17.0	17.0
Effective Green, g (s)	5.8	14.5	14.5	6.4	15.1		7.4	17.9		6.5	17.0	17.0
Actuated g/C Ratio	0.09	0.23	0.23	0.10	0.24		0.12	0.28		0.10	0.27	0.27
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	4.5	4.5	2.0	4.5		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)	163	813	364	180	817		208	988		182	953	426
v/s Ratio Prot	0.04	0.07		c0.06	c0.11		c0.08	0.13		0.06	c0.14	
v/s Ratio Perm			0.01									0.02
v/c Ratio	0.47	0.33	0.06	0.56	0.46		0.69	0.46		0.55	0.52	0.07
Uniform Delay, d1	27.2	20.2	19.0	27.0	20.5		26.8	18.6		26.9	19.6	17.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.4	0.1	2.1	0.7		7.8	0.7		2.1	1.0	0.1
Delay (s)	28.0	20.6	19.1	29.1	21.2		34.5	19.4		29.0	20.6	17.3
Level of Service	C	C	B	C	C		C	B		C	C	B
Approach Delay (s)		21.6			22.8			22.9			21.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	459	127	112	372	153	109	570	52	131	430	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3385		1770	3495		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3385		1770	3495		1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.91	0.91	0.91	0.85	0.85	0.85
Adj. Flow (vph)	131	478	132	129	428	176	120	626	57	154	506	94
RTOR Reduction (vph)	0	0	96	0	54	0	0	8	0	0	0	68
Lane Group Flow (vph)	131	478	36	129	550	0	120	675	0	154	506	26
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									2
Actuated Green, G (s)	7.5	19.5	19.5	7.5	19.5		7.3	19.0		7.9	19.6	19.6
Effective Green, g (s)	7.5	19.5	19.5	7.5	19.5		7.3	19.0		7.9	19.6	19.6
Actuated g/C Ratio	0.10	0.27	0.27	0.10	0.27		0.10	0.26		0.11	0.27	0.27
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	4.5	4.5	2.0	4.5		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)	185	962	431	185	921		180	926		195	967	433
v/s Ratio Prot	c0.07	0.14		0.07	c0.16		0.07	c0.19		c0.09	0.14	
v/s Ratio Perm			0.02									0.02
v/c Ratio	0.71	0.50	0.08	0.70	0.60		0.67	0.73		0.79	0.52	0.06
Uniform Delay, d1	31.0	22.0	19.4	31.0	22.7		31.0	24.0		31.1	22.1	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.7	0.7	0.1	8.9	1.4		7.0	3.6		17.5	1.0	0.1
Delay (s)	40.7	22.7	19.6	39.9	24.1		38.1	27.6		48.6	23.1	19.4
Level of Service	D	C	B	D	C		D	C		D	C	B
Approach Delay (s)		25.3			26.9			29.1			27.8	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	17.8
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	128	0	0	0	173	1160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.2					4.9
Lane Util. Factor	1.00					0.91
Frt	1.00					1.00
Flt Protected	0.95					0.99
Satd. Flow (prot)	1770					5053
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5053
Peak-hour factor, PHF	0.59	0.59	0.92	0.92	0.82	0.82
Adj. Flow (vph)	217	0	0	0	211	1415
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	217	0	0	0	0	1626
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	13.1					30.2
Effective Green, g (s)	13.1					30.2
Actuated g/C Ratio	0.25					0.58
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	443					2912
v/s Ratio Prot	c0.12					c0.32
v/s Ratio Perm						
v/c Ratio	0.49					0.56
Uniform Delay, d1	16.8					6.9
Progression Factor	1.00					1.00
Incremental Delay, d2	1.7					0.4
Delay (s)	18.5					7.4
Level of Service	B					A
Approach Delay (s)	18.5		0.0			7.4
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	99	0	0	0	246	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.2					4.9
Lane Util. Factor	1.00					0.91
Frt	1.00					1.00
Flt Protected	0.95					0.99
Satd. Flow (prot)	1770					5025
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5025
Peak-hour factor, PHF	0.75	0.75	0.92	0.92	0.89	0.89
Adj. Flow (vph)	132	0	0	0	276	875
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	132	0	0	0	0	1151
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	8.1					27.2
Effective Green, g (s)	8.1					27.2
Actuated g/C Ratio	0.18					0.61
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	323					3078
v/s Ratio Prot	c0.07					c0.23
v/s Ratio Perm						
v/c Ratio	0.41					0.37
Uniform Delay, d1	16.0					4.3
Progression Factor	1.00					1.00
Incremental Delay, d2	1.6					0.2
Delay (s)	17.7					4.5
Level of Service	B					A
Approach Delay (s)	17.7		0.0			4.5
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	170	0	0	128	217	2	406	260	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		5084	1583			
Flt Permitted	0.64	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1196	1863			1863	1583		5084	1583			
Peak-hour factor, PHF	0.79	0.79	0.79	0.70	0.70	0.70	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	215	0	0	183	310	2	441	283	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	185	0	0	174	0	0	0
Lane Group Flow (vph)	9	215	0	0	183	125	0	443	109	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	17.5	17.5			17.5	17.5		16.7	16.7			
Effective Green, g (s)	17.5	17.5			17.5	17.5		16.7	16.7			
Actuated g/C Ratio	0.40	0.40			0.40	0.40		0.39	0.39			
Clearance Time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	5.7	5.7			5.7	5.7		5.2	5.2			
Lane Grp Cap (vph)	483	753			753	640		1961	611			
v/s Ratio Prot		c0.12			0.10			c0.09				
v/s Ratio Perm	0.01					0.08			0.07			
v/c Ratio	0.02	0.29			0.24	0.20		0.23	0.18			
Uniform Delay, d1	7.7	8.7			8.5	8.3		9.0	8.8			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.0	0.5			0.4	0.4		0.1	0.3			
Delay (s)	7.8	9.2			9.0	8.7		9.1	9.1			
Level of Service	A	A			A	A		A	A			
Approach Delay (s)		9.2			8.8			9.1			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
79: CA 180 EB & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	233	0	0	98	192	0	832	578	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		5085	1583			
Flt Permitted	0.68	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1266	1863			1863	1583		5085	1583			
Peak-hour factor, PHF	0.87	0.87	0.87	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	20	268	0	0	120	234	0	945	657	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	48	0	0	224	0	0	0
Lane Group Flow (vph)	20	268	0	0	120	186	0	945	433	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	18.8	18.8			18.8	18.8		29.1	29.1			
Effective Green, g (s)	18.8	18.8			18.8	18.8		29.1	29.1			
Actuated g/C Ratio	0.33	0.33			0.33	0.33		0.51	0.51			
Clearance Time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	5.7	5.7			5.7	5.7		5.2	5.2			
Lane Grp Cap (vph)	418	614			614	522		2596	808			
v/s Ratio Prot		c0.14			0.06			0.19				
v/s Ratio Perm	0.02					0.12			c0.27			
v/c Ratio	0.05	0.44			0.20	0.36		0.36	0.54			
Uniform Delay, d1	13.0	15.0			13.7	14.5		8.4	9.4			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.1	1.3			0.4	1.1		0.2	1.3			
Delay (s)	13.1	16.2			14.1	15.6		8.6	10.7			
Level of Service	B	B			B	B		A	B			
Approach Delay (s)		16.0			15.1			9.5			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	322	710	5	72	0	0	0	0	3	628	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	4.9
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frt		0.91		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1690		1770	1863						3538	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1690		1770	1863						3538	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	393	866	6	86	0	0	0	0	4	757	134
RTOR Reduction (vph)	0	74	0	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	0	1185	0	6	86	0	0	0	0	0	761	52
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		26.2		1.0	30.9						25.0	25.0
Effective Green, g (s)		26.2		1.0	30.9						25.0	25.0
Actuated g/C Ratio		0.40		0.02	0.48						0.38	0.38
Clearance Time (s)		4.2		3.7	4.2						4.9	4.9
Vehicle Extension (s)		4.9		2.0	4.6						5.2	5.2
Lane Grp Cap (vph)		681		27	886						1361	609
v/s Ratio Prot		c0.70		c0.00	0.05						c0.22	
v/s Ratio Perm												0.03
v/c Ratio		1.74		0.22	0.10						0.56	0.08
Uniform Delay, d1		19.4		31.6	9.4						15.7	12.7
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		339.1		1.5	0.1						0.9	0.1
Delay (s)		358.5		33.1	9.5						16.6	12.9
Level of Service		F		C	A						B	B
Approach Delay (s)		358.5			11.0			0.0			16.0	
Approach LOS		F			B			A			B	

Intersection Summary			
HCM Average Control Delay	207.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	194	313	13	121	0	0	0	0	3	691	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	4.9
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frt		0.92		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1708		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1708		1770	1863						3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.74	0.74	0.74	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	216	348	18	164	0	0	0	0	3	803	186
RTOR Reduction (vph)	0	55	0	0	0	0	0	0	0	0	0	112
Lane Group Flow (vph)	0	509	0	18	164	0	0	0	0	0	806	74
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		26.1		1.1	30.9						26.5	26.5
Effective Green, g (s)		26.1		1.1	30.9						26.5	26.5
Actuated g/C Ratio		0.39		0.02	0.46						0.40	0.40
Clearance Time (s)		4.2		3.7	4.2						4.9	4.9
Vehicle Extension (s)		4.9		2.0	4.6						5.2	5.2
Lane Grp Cap (vph)		670		29	866						1410	631
v/s Ratio Prot		c0.30		c0.01	0.09						c0.23	
v/s Ratio Perm												0.05
v/c Ratio		0.76		0.62	0.19						0.57	0.12
Uniform Delay, d1		17.5		32.5	10.4						15.6	12.6
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		5.9		26.1	0.2						0.9	0.2
Delay (s)		23.4		58.6	10.6						16.5	12.8
Level of Service		C		E	B						B	B
Approach Delay (s)		23.4			15.4			0.0			15.8	
Approach LOS		C			B			A			B	

Intersection Summary

HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.8
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
81: Broadway St & Amador St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	125	17	2	17	6	5	14	1	9	24	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.78	0.78	0.78	0.67	0.67	0.67	0.75	0.75	0.75
Hourly flow rate (vph)	7	132	18	3	22	8	7	21	1	12	32	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1300										
pX, platoon unblocked												
vC, conflicting volume	29			149			206	190	75	123	195	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	29			149			206	190	75	123	195	26
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	97	100	99	95	100
cM capacity (veh/h)	1582			1429			701	699	972	814	695	1044

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	73	84	32	30	48
Volume Left	7	0	3	7	12
Volume Right	0	18	8	1	4
cSH	1582	1700	1429	710	743
Volume to Capacity	0.00	0.05	0.00	0.04	0.06
Queue Length 95th (ft)	0	0	0	3	5
Control Delay (s)	0.8	0.0	0.6	10.3	10.2
Lane LOS	A		A	B	B
Approach Delay (s)	0.4		0.6	10.3	10.2
Approach LOS				B	B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
81: Broadway St & Amador St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	3	60	16	5	94	0	14	18	1	10	6	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.63	0.63	0.63	0.67	0.67	0.67	0.58	0.58	0.58
Hourly flow rate (vph)	4	80	21	8	149	0	21	27	1	17	10	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1300										
pX, platoon unblocked												
vC, conflicting volume	149			101			278	264	51	228	274	149
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	149			101			278	264	51	228	274	149
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	96	100	97	98	99
cM capacity (veh/h)	1430			1489			634	635	1007	680	626	871

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	44	61	157	49	36
Volume Left	4	0	8	21	17
Volume Right	0	21	0	1	9
cSH	1430	1700	1489	642	699
Volume to Capacity	0.00	0.04	0.01	0.08	0.05
Queue Length 95th (ft)	0	0	0	6	4
Control Delay (s)	0.7	0.0	0.4	11.1	10.4
Lane LOS	A		A	B	B
Approach Delay (s)	0.3		0.4	11.1	10.4
Approach LOS				B	B

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	19.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
82: Broadway St & San Joaquin St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	124	7	3	22	5	0	6	5	8	7	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.55	0.55	0.55	0.47	0.47	0.47
Hourly flow rate (vph)	4	132	7	4	27	6	0	11	9	17	15	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1008							
pX, platoon unblocked												
vC, conflicting volume	33			139			193	184	70	126	185	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			139			193	184	70	126	185	30
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	98	100
cM capacity (veh/h)	1578			1442			732	706	979	814	705	1038

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	70	73	36	20	36
Volume Left	4	0	4	0	17
Volume Right	0	7	6	9	4
cSH	1578	1700	1442	808	784
Volume to Capacity	0.00	0.04	0.00	0.02	0.05
Queue Length 95th (ft)	0	0	0	2	4
Control Delay (s)	0.5	0.0	0.8	9.6	9.8
Lane LOS	A		A	A	A
Approach Delay (s)	0.2		0.8	9.6	9.8
Approach LOS				A	A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
82: Broadway St & San Joaquin St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	9	63	4	5	90	4	1	20	2	14	9	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.59	0.59	0.59	0.72	0.72	0.72	0.68	0.68	0.68
Hourly flow rate (vph)	13	90	6	8	153	7	1	28	3	21	13	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1008							
pX, platoon unblocked												
vC, conflicting volume	159			96			308	295	48	260	294	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	159			96			308	295	48	260	294	156
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	95	100	97	98	99
cM capacity (veh/h)	1418			1496			597	606	1011	639	607	862

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	58	51	168	32	44
Volume Left	13	0	8	1	21
Volume Right	0	6	7	3	10
cSH	1418	1700	1496	628	669
Volume to Capacity	0.01	0.03	0.01	0.05	0.07
Queue Length 95th (ft)	1	0	0	4	5
Control Delay (s)	1.7	0.0	0.4	11.0	10.8
Lane LOS	A		A	B	B
Approach Delay (s)	0.9		0.4	11.0	10.8
Approach LOS				B	B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	7	6	23	12	46	53	838	36	28	301	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	2049	1742	1947	3869		1947	3582	
Flt Permitted	0.74	1.00	1.00	0.75	1.00	1.00	0.37	1.00		0.29	1.00	
Satd. Flow (perm)	1522	2049	1742	1540	2049	1742	765	3869		590	3582	
Peak-hour factor, PHF	0.75	0.75	0.75	0.54	0.54	0.54	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	11	9	8	43	22	85	60	942	40	32	342	391
RTOR Reduction (vph)	0	0	6	0	0	36	0	7	0	0	199	0
Lane Group Flow (vph)	11	9	2	43	22	49	60	975	0	32	534	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)	6.4	6.4	6.4	6.4	6.4	6.4	13.9	13.9		13.9	13.9	
Effective Green, g (s)	6.4	6.4	6.4	6.4	6.4	6.4	13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.49	0.49		0.49	0.49	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	344	463	394	348	463	394	376	1900		290	1759	
v/s Ratio Prot		0.00			0.01			c0.25			0.15	
v/s Ratio Perm	0.01		0.00	0.03		c0.03	0.08			0.05		
v/c Ratio	0.03	0.02	0.00	0.12	0.05	0.13	0.16	0.51		0.11	0.30	
Uniform Delay, d1	8.5	8.5	8.5	8.7	8.6	8.7	4.0	4.9		3.9	4.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.2		0.2	0.1	
Delay (s)	8.6	8.5	8.5	8.9	8.6	8.9	4.2	5.1		4.0	4.4	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		8.5			8.8			5.1			4.4	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	28.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	15	12	38	64	38	40	53	405	45	52	826	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	2049	1742	1947	3835		1947	3725	
Flt Permitted	0.73	1.00	1.00	0.75	1.00	1.00	0.25	1.00		0.43	1.00	
Satd. Flow (perm)	1491	2049	1742	1532	2049	1742	522	3835		885	3725	
Peak-hour factor, PHF	0.81	0.81	0.81	0.85	0.85	0.85	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	19	15	47	75	45	47	69	526	58	60	960	388
RTOR Reduction (vph)	0	0	33	0	0	36	0	17	0	0	88	0
Lane Group Flow (vph)	19	15	14	75	45	11	69	567	0	60	1260	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)	7.0	7.0	7.0	7.0	7.0	7.0	15.7	15.7		15.7	15.7	
Effective Green, g (s)	7.0	7.0	7.0	7.0	7.0	7.0	15.7	15.7		15.7	15.7	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.51	0.51		0.51	0.51	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	340	467	397	349	467	397	267	1961		453	1905	
v/s Ratio Prot		0.01			0.02			0.15			c0.34	
v/s Ratio Perm	0.01		0.01	c0.05		0.01	0.13			0.07		
v/c Ratio	0.06	0.03	0.03	0.21	0.10	0.03	0.26	0.29		0.13	0.66	
Uniform Delay, d1	9.3	9.2	9.2	9.6	9.4	9.2	4.2	4.3		3.9	5.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0	0.0	0.3	0.1	0.0	0.5	0.1		0.1	0.9	
Delay (s)	9.3	9.2	9.3	9.9	9.4	9.2	4.7	4.4		4.1	6.4	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		9.3			9.6			4.4			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	30.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	68	26	38	127	1	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.96	0.96	0.50	0.92
Hourly flow rate (vph)	84	32	40	132	2	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1009			513		
pX, platoon unblocked						
vC, conflicting volume			116		311	100
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		311	100
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	99
cM capacity (veh/h)			1473		663	956

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	116	172	9
Volume Left	0	40	2
Volume Right	32	0	7
cSH	1700	1473	866
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (ft)	0	2	1
Control Delay (s)	0.0	1.9	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	9.2
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	91	18	70	162	4	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.82	0.82	0.88	0.88
Hourly flow rate (vph)	106	21	85	198	5	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1009			513		
pX, platoon unblocked						
vC, conflicting volume			127		485	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			127		485	116
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		99	98
cM capacity (veh/h)			1459		510	936

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	127	283	19
Volume Left	0	85	5
Volume Right	21	0	15
cSH	1700	1459	782
Volume to Capacity	0.07	0.06	0.02
Queue Length 95th (ft)	0	5	2
Control Delay (s)	0.0	2.7	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	2.7	9.7
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	59	31	9	3	141	5	7	4	2	1	5	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.87	0.87	0.87	0.65	0.65	0.65	0.75	0.75	0.75
Hourly flow rate (vph)	71	37	11	3	162	6	11	6	3	1	7	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		496										
pX, platoon unblocked												
vC, conflicting volume	168			48			392	360	43	363	362	165
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	168			48			392	360	43	363	362	165
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	99	100	100	99	96
cM capacity (veh/h)	1410			1559			520	537	1028	563	536	880

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	119	171	20	40
Volume Left	71	3	11	1
Volume Right	11	6	3	32
cSH	1410	1559	569	781
Volume to Capacity	0.05	0.00	0.04	0.05
Queue Length 95th (ft)	4	0	3	4
Control Delay (s)	4.7	0.2	11.6	9.9
Lane LOS	A	A	B	A
Approach Delay (s)	4.7	0.2	11.6	9.9
Approach LOS			B	A

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	139	36	8	2	60	7	4	9	2	1	14	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.86	0.86	0.86	0.54	0.54	0.54	0.82	0.82	0.82
Hourly flow rate (vph)	174	45	10	2	70	8	7	17	4	1	17	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		487										
pX, platoon unblocked												
vC, conflicting volume	78			55			494	480	50	488	481	74
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	78			55			494	480	50	488	481	74
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			98	96	100	100	96	99
cM capacity (veh/h)	1521			1550			425	429	1018	432	429	988

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	229	80	28	28
Volume Left	174	2	7	1
Volume Right	10	8	4	10
cSH	1521	1550	464	534
Volume to Capacity	0.11	0.00	0.06	0.05
Queue Length 95th (ft)	10	0	5	4
Control Delay (s)	6.0	0.2	13.3	12.1
Lane LOS	A	A	B	B
Approach Delay (s)	6.0	0.2	13.3	12.1
Approach LOS			B	B

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	30	16	29	17	9	2	71	563	10	3	381	104
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.78	0.78	0.78	0.83	0.83	0.83	0.92	0.92	0.92
Hourly flow rate (vph)	34	18	33	22	12	3	86	678	12	3	414	113
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								713			458	
pX, platoon unblocked	1.00	1.00		1.00	1.00	1.00				1.00		
vC, conflicting volume	996	1339	264	1111	1389	345	527			690		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	990	1334	264	1105	1384	337	527			683		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	87	96	84	91	100	92			100		
cM capacity (veh/h)	174	139	735	133	130	657	1036			903		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	84	36	86	452	238	3	276	251
Volume Left	34	22	86	0	0	3	0	0
Volume Right	33	3	0	0	12	0	0	113
cSH	229	140	1036	1700	1700	903	1700	1700
Volume to Capacity	0.37	0.26	0.08	0.27	0.14	0.00	0.16	0.15
Queue Length 95th (ft)	40	24	7	0	0	0	0	0
Control Delay (s)	29.5	39.5	8.8	0.0	0.0	9.0	0.0	0.0
Lane LOS	D	E	A			A		
Approach Delay (s)	29.5	39.5	1.0			0.1		
Approach LOS	D	E						

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	33.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕		↰	↑↑↱		↰	↑↑↱	
Volume (veh/h)	68	8	71	14	8	10	42	477	14	2	577	43
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.73	0.73	0.73	0.91	0.91	0.91	0.77	0.77	0.77
Hourly flow rate (vph)	83	10	87	19	11	14	46	524	15	3	749	56
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								698			474	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1156	1414	403	1096	1435	270	805			540		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	767	1080	0	694	1105	270	343			540		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	62	94	90	92	93	98	95			100		
cM capacity (veh/h)	216	170	896	226	165	728	1002			1025		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	179	44	46	349	190	3	500	306
Volume Left	83	19	46	0	0	3	0	0
Volume Right	87	14	0	0	15	0	0	56
cSH	333	258	1002	1700	1700	1025	1700	1700
Volume to Capacity	0.54	0.17	0.05	0.21	0.11	0.00	0.29	0.18
Queue Length 95th (ft)	75	15	4	0	0	0	0	0
Control Delay (s)	27.7	21.8	8.8	0.0	0.0	8.5	0.0	0.0
Lane LOS	D	C	A			A		
Approach Delay (s)	27.7	21.8	0.7			0.0		
Approach LOS	D	C						

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	41.8%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
87: O St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	22	12	0	107	0	0	0	0	214	100	608
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	24	13	0	120	0	0	0	0	252	118	715

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	37	120	0	369	715
Volume Left (vph)	0	0	0	252	0
Volume Right (vph)	13	0	0	0	715
Hadj (s)	-0.18	0.03	0.00	0.17	-0.57
Departure Headway (s)	4.8	4.9	4.7	4.5	3.2
Degree Utilization, x	0.05	0.16	0.00	0.46	0.64
Capacity (veh/h)	683	687	721	780	1119
Control Delay (s)	8.0	8.8	7.7	11.2	11.6
Approach Delay (s)	8.0	8.8	0.0	11.5	
Approach LOS	A	A	A	B	

Intersection Summary			
Delay	11.1		
HCM Level of Service	B		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
87: O St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	111	24	0	223	0	0	0	6	211	17	135
Peak Hour Factor	0.76	0.76	0.76	0.78	0.78	0.78	0.50	0.50	0.50	0.88	0.88	0.88
Hourly flow rate (vph)	0	146	32	0	286	0	0	0	12	240	19	153

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	178	286	12	259	153
Volume Left (vph)	0	0	0	240	0
Volume Right (vph)	32	0	12	0	153
Hadj (s)	-0.07	0.03	-0.57	0.22	-0.57
Departure Headway (s)	5.0	4.9	5.0	5.3	3.2
Degree Utilization, x	0.25	0.39	0.02	0.38	0.14
Capacity (veh/h)	674	695	622	634	1121
Control Delay (s)	9.6	11.1	8.0	11.6	6.7
Approach Delay (s)	9.6	11.1	8.0	9.8	
Approach LOS	A	B	A	A	

Intersection Summary			
Delay	10.1		
HCM Level of Service	B		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	71	94	0	0	0	171	0	108	11	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	86	113	0	0	0	199	0	127	13	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1075										
pX, platoon unblocked												
vC, conflicting volume	0			113			384	284	57	304	284	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			113			384	284	57	304	284	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	78	99	100	100	100
cM capacity (veh/h)	1622			1474			527	591	998	495	591	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	86	57	57	199	85	55
Volume Left	86	0	0	0	0	0
Volume Right	0	0	0	199	0	13
cSH	1622	1700	1700	1700	591	653
Volume to Capacity	0.05	0.03	0.03	0.12	0.14	0.08
Queue Length 95th (ft)	4	0	0	0	12	7
Control Delay (s)	7.3	0.0	0.0	0.0	12.1	11.0
Lane LOS	A				B	B
Approach Delay (s)	3.2			0.0	11.7	
Approach LOS					B	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	553	100	0	0	0	251	0	146	31	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.83	0.83	0.83	0.83	0.83	0.83	0.92	0.92	0.92
Hourly flow rate (vph)	643	116	0	0	0	302	0	176	37	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			116			1554	1402	58	1469	1402	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			116			1554	1402	58	1469	1402	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	60			100			100	0	96	0	100	100
cM capacity (veh/h)	1622			1470			53	84	996	0	84	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	643	58	58	302	117	96
Volume Left	643	0	0	0	0	0
Volume Right	0	0	0	302	0	37
cSH	1622	1700	1700	1700	84	130
Volume to Capacity	0.40	0.03	0.03	0.18	1.40	0.74
Queue Length 95th (ft)	49	0	0	0	226	106
Control Delay (s)	8.7	0.0	0.0	0.0	325.8	86.2
Lane LOS	A				F	F
Approach Delay (s)	7.3			0.0	218.0	
Approach LOS					F	

Intersection Summary			
Average Delay	40.8		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	78	316	3	4	136	35	3	2	15	60	5	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.66	0.66	0.66	0.71	0.71	0.71	0.66	0.66	0.66
Hourly flow rate (vph)	100	405	4	6	206	53	4	3	21	91	8	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		488										
pX, platoon unblocked												
vC, conflicting volume	259			409			881	878	204	670	854	233
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	259			409			881	878	204	670	854	233
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			99			98	99	97	71	97	97
cM capacity (veh/h)	1303			1146			214	262	802	310	271	769

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	303	206	265	28	124
Volume Left	100	0	6	4	91
Volume Right	0	4	53	21	26
cSH	1303	1700	1146	495	351
Volume to Capacity	0.08	0.12	0.01	0.06	0.35
Queue Length 95th (ft)	6	0	0	5	39
Control Delay (s)	3.1	0.0	0.2	12.7	20.8
Lane LOS	A		A	B	C
Approach Delay (s)	1.8		0.2	12.7	20.8
Approach LOS				B	C

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
90: Broadway St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	15	219	0	2	135	21	1	2	5	71	27	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.83	0.83	0.83	0.67	0.67	0.67	0.83	0.83	0.83
Hourly flow rate (vph)	21	313	0	2	163	25	1	3	7	86	33	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		490										
pX, platoon unblocked												
vC, conflicting volume	188			313			588	548	156	388	536	175
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	188			313			588	548	156	388	536	175
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	99	99	84	93	96
cM capacity (veh/h)	1384			1244			350	434	861	530	442	838

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	178	156	190	12	154
Volume Left	21	0	2	1	86
Volume Right	0	0	25	7	36
cSH	1384	1700	1244	603	555
Volume to Capacity	0.02	0.09	0.00	0.02	0.28
Queue Length 95th (ft)	1	0	0	2	28
Control Delay (s)	1.0	0.0	0.1	11.1	14.0
Lane LOS	A		A	B	B
Approach Delay (s)	0.6		0.1	11.1	14.0
Approach LOS				B	B

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	34.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
91: E Hamilton Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	2	4	6	0	21	4	96	8	44	171	9
Peak Hour Factor	0.40	0.40	0.40	0.84	0.84	0.84	0.79	0.79	0.79	0.84	0.84	0.84
Hourly flow rate (vph)	5	5	10	7	0	25	5	122	10	52	204	11

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	20	7	25	137	267
Volume Left (vph)	5	7	0	5	52
Volume Right (vph)	10	0	25	10	11
Hadj (s)	-0.22	0.23	-0.57	0.00	0.05
Departure Headway (s)	4.6	5.0	3.2	4.2	4.2
Degree Utilization, x	0.03	0.01	0.02	0.16	0.31
Capacity (veh/h)	715	651	1121	830	856
Control Delay (s)	7.7	8.1	6.3	8.0	9.0
Approach Delay (s)	7.7	6.7		8.0	9.0
Approach LOS	A	A		A	A

Intersection Summary				
Delay	8.5			
HCM Level of Service	A			
Intersection Capacity Utilization	28.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
91: E Hamilton Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	3	1	18	1	59	5	130	16	32	136	10
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.88	0.88	0.88	0.84	0.84	0.84
Hourly flow rate (vph)	18	4	1	27	1	88	6	148	18	38	162	12

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	24	28	88	172	212
Volume Left (vph)	18	27	0	6	38
Volume Right (vph)	1	0	88	18	12
Hadj (s)	0.15	0.22	-0.57	-0.02	0.04
Departure Headway (s)	4.9	5.0	3.2	4.2	4.2
Degree Utilization, x	0.03	0.04	0.08	0.20	0.25
Capacity (veh/h)	667	658	1121	828	832
Control Delay (s)	8.1	8.2	6.5	8.3	8.7
Approach Delay (s)	8.1	6.9		8.3	8.7
Approach LOS	A	A		A	A

Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
92: E California Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	3	2	3	4	8	4	100	8	139	140	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.94	0.94	0.94	0.82	0.82	0.82	0.86	0.86	0.86
Hourly flow rate (vph)	2	6	4	3	4	9	5	122	10	162	163	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	659	653	188	655	674	127	214			132		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	659	653	188	655	674	127	214			132		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	99	99	99	100			89		
cM capacity (veh/h)	338	342	854	340	333	923	1356			1453		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	16	137	376
Volume Left	2	3	5	162
Volume Right	4	9	10	51
cSH	427	509	1356	1453
Volume to Capacity	0.03	0.03	0.00	0.11
Queue Length 95th (ft)	2	2	0	9
Control Delay (s)	13.7	12.3	0.3	3.9
Lane LOS	B	B	A	A
Approach Delay (s)	13.7	12.3	0.3	3.9
Approach LOS	B	B		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
92: E California Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	12	4	2	10	5	12	4	123	14	138	152	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.88	0.88	0.88	0.86	0.86	0.86
Hourly flow rate (vph)	16	5	3	13	7	16	5	140	16	160	177	65
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	706	695	209	692	720	148	242			156		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706	695	209	692	720	148	242			156		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	98	100	96	98	98	100			89		
cM capacity (veh/h)	309	323	831	321	313	899	1325			1424		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	24	36	160	402
Volume Left	16	13	5	160
Volume Right	3	16	16	65
cSH	336	447	1325	1424
Volume to Capacity	0.07	0.08	0.00	0.11
Queue Length 95th (ft)	6	7	0	9
Control Delay (s)	16.6	13.8	0.2	3.7
Lane LOS	C	B	A	A
Approach Delay (s)	16.6	13.8	0.2	3.7
Approach LOS	C	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
96: E Church Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	34	153	45	29	151	178	249	177	44	51	239	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3777		1947	3749	
Flt Permitted	0.65	1.00	1.00	0.61	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1324	3893	1742	1241	2049	1742	1947	3777		1947	3749	
Peak-hour factor, PHF	0.65	0.65	0.65	0.86	0.86	0.86	0.76	0.76	0.76	0.91	0.91	0.91
Adj. Flow (vph)	52	235	69	34	176	207	328	233	58	56	263	86
RTOR Reduction (vph)	0	0	52	0	0	157	0	32	0	0	61	0
Lane Group Flow (vph)	52	235	17	34	176	50	328	259	0	56	288	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	10.9	10.9	10.9	10.9	10.9	10.9	10.8	20.4		1.7	11.3	
Effective Green, g (s)	10.9	10.9	10.9	10.9	10.9	10.9	10.8	20.4		1.7	11.3	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.45		0.04	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	943	422	301	496	422	467	1712		74	941	
v/s Ratio Prot		0.06			c0.09		c0.17	0.07		0.03	c0.08	
v/s Ratio Perm	0.04		0.01	0.03		0.03						
v/c Ratio	0.16	0.25	0.04	0.11	0.35	0.12	0.70	0.15		0.76	0.31	
Uniform Delay, d1	13.4	13.8	13.0	13.3	14.1	13.3	15.6	7.2		21.4	13.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0	0.2	0.4	0.1	4.7	0.0		35.0	0.2	
Delay (s)	13.7	13.9	13.1	13.5	14.6	13.4	20.4	7.3		56.4	13.9	
Level of Service	B	B	B	B	B	B	C	A		E	B	
Approach Delay (s)		13.7			13.9			14.2			19.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
96: E Church Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	65	202	37	31	210	266	228	131	29	59	249	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3787		1947	3699	
Flt Permitted	0.55	1.00	1.00	0.62	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1133	3893	1742	1267	2049	1742	1947	3787		1947	3699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.82	0.82	0.82	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	68	213	39	38	256	324	251	144	32	79	332	165
RTOR Reduction (vph)	0	0	28	0	0	231	0	21	0	0	119	0
Lane Group Flow (vph)	68	213	11	38	256	93	251	155	0	79	378	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	12.0	12.0	12.0	12.0	12.0	12.0	6.2	14.7		3.2	11.7	
Effective Green, g (s)	12.0	12.0	12.0	12.0	12.0	12.0	6.2	14.7		3.2	11.7	
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.15	0.35		0.08	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	1115	499	363	587	499	288	1329		149	1033	
v/s Ratio Prot		0.05			c0.12		c0.13	c0.04		0.04	c0.10	
v/s Ratio Perm	0.06		0.01	0.03		0.05						
v/c Ratio	0.21	0.19	0.02	0.10	0.44	0.19	0.87	0.12		0.53	0.37	
Uniform Delay, d1	11.4	11.3	10.7	11.0	12.2	11.3	17.5	9.2		18.6	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1	0.0	0.1	0.5	0.2	23.8	0.0		3.6	0.2	
Delay (s)	11.7	11.4	10.8	11.1	12.7	11.4	41.3	9.2		22.2	12.3	
Level of Service	B	B	B	B	B	B	D	A		C	B	
Approach Delay (s)		11.4			12.0			28.1			13.7	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
101: S East Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	65	25	5	19	37	6	1	163	37	4	395	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1947	1996		1947	2006		1947	3893	1742	1947	3893	1742
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1947	1996		1947	2006		1947	3893	1742	1947	3893	1742
Peak-hour factor, PHF	0.85	0.85	0.85	0.60	0.60	0.60	0.81	0.81	0.81	0.99	0.99	0.99
Adj. Flow (vph)	76	29	6	32	62	10	1	201	46	4	399	25
RTOR Reduction (vph)	0	4	0	0	8	0	0	0	34	0	0	18
Lane Group Flow (vph)	76	31	0	32	64	0	1	201	12	4	399	7
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	1.7	9.2		0.5	8.0		0.5	9.5	9.5	0.5	9.5	9.5
Effective Green, g (s)	1.7	9.2		0.5	8.0		0.5	9.5	9.5	0.5	9.5	9.5
Actuated g/C Ratio	0.05	0.26		0.01	0.22		0.01	0.27	0.27	0.01	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	93	514		27	450		27	1036	464	27	1036	464
v/s Ratio Prot	c0.04	0.02		0.02	c0.03		0.00	0.05		c0.00	c0.10	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.82	0.06		1.19	0.14		0.04	0.19	0.03	0.15	0.39	0.01
Uniform Delay, d1	16.8	10.0		17.6	11.1		17.4	10.1	9.7	17.4	10.7	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.4	0.0		234.8	0.1		0.6	0.1	0.0	2.5	0.2	0.0
Delay (s)	57.2	10.0		252.4	11.2		17.9	10.2	9.7	19.9	11.0	9.7
Level of Service	E	B		F	B		B	B	A	B	B	A
Approach Delay (s)		42.4			85.4			10.2			11.0	
Approach LOS		D			F			B			B	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
102: E Jensen Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWL	NWT
Lane Configurations												
Volume (vph)	57	43	29	125	59	2	54	74	689	140	91	869
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95			0.97	0.95		0.97	0.95
Frt	1.00	0.94		1.00	1.00			1.00	0.97		1.00	0.97
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3776	3660		3776	3875			3776	3795		3776	3788
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3660		3776	3875			3776	3795		3776	3788
Peak-hour factor, PHF	0.85	0.85	0.85	0.97	0.97	0.97	0.78	0.78	0.78	0.78	0.83	0.83
Adj. Flow (vph)	67	51	34	129	61	2	69	95	883	179	110	1047
RTOR Reduction (vph)	0	31	0	0	2	0	0	0	20	0	0	22
Lane Group Flow (vph)	67	54	0	129	61	0	0	164	1042	0	110	1254
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	2.1	5.6		2.9	6.4			3.7	30.1		3.7	30.1
Effective Green, g (s)	2.1	5.6		2.9	6.4			3.7	30.1		3.7	30.1
Actuated g/C Ratio	0.04	0.10		0.05	0.11			0.06	0.52		0.06	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	136	352		188	425			240	1959		240	1956
v/s Ratio Prot	0.02	0.01		c0.03	c0.02			c0.04	0.27		0.03	c0.33
v/s Ratio Perm												
v/c Ratio	0.49	0.15		0.69	0.14			0.68	0.53		0.46	0.64
Uniform Delay, d1	27.6	24.2		27.3	23.5			26.7	9.4		26.3	10.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.8	0.2		9.9	0.2			7.8	0.3		1.4	0.7
Delay (s)	30.4	24.4		37.2	23.6			34.5	9.7		27.7	10.9
Level of Service	C	C		D	C			C	A		C	B
Approach Delay (s)		27.0			32.7				13.0			12.3
Approach LOS		C			C				B			B

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	190
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	229
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
102: E Jensen Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWL	NWT
Lane Configurations												
Volume (vph)	135	94	77	124	49	5	123	78	820	92	53	818
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95			0.97	0.95		0.97	0.95
Frt	1.00	0.93		1.00	0.99			1.00	0.98		1.00	0.98
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3776	3630		3776	3841			3776	3834		3776	3806
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3630		3776	3841			3776	3834		3776	3806
Peak-hour factor, PHF	0.85	0.85	0.85	0.97	0.97	0.97	0.85	0.85	0.85	0.85	0.92	0.92
Adj. Flow (vph)	159	111	91	128	51	5	145	92	965	108	58	889
RTOR Reduction (vph)	0	80	0	0	5	0	0	0	11	0	0	21
Lane Group Flow (vph)	159	122	0	128	51	0	0	237	1062	0	58	1023
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	4.8	6.2		2.9	4.3			6.3	24.2		2.2	20.1
Effective Green, g (s)	4.8	6.2		2.9	4.3			6.3	24.2		2.2	20.1
Actuated g/C Ratio	0.09	0.12		0.06	0.08			0.12	0.47		0.04	0.39
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	352	437		213	321			462	1802		161	1485
v/s Ratio Prot	c0.04	c0.03		0.03	0.01			c0.06	0.28		0.02	c0.27
v/s Ratio Perm												
v/c Ratio	0.45	0.28		0.60	0.16			0.51	0.59		0.36	0.69
Uniform Delay, d1	22.1	20.6		23.7	21.9			21.2	10.0		24.0	13.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.4		4.7	0.2			1.0	0.5		1.4	1.4
Delay (s)	23.0	21.0		28.4	22.2			22.1	10.5		25.3	14.4
Level of Service	C	C		C	C			C	B		C	B
Approach Delay (s)		21.9			26.5				12.6			15.0
Approach LOS		C			C				B			B

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	143
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	155
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis
104: Orange Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↑↑↱			↑↑↱	
Volume (veh/h)	49	0	17	0	0	0	0	149	69	13	137	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.66	0.66	0.66	0.90	0.90	0.90	0.98	0.98	0.98
Hourly flow rate (vph)	68	0	24	0	0	0	0	166	77	13	140	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	300	370	121	249	409	70	140			242		
vC1, stage 1 conf vol	204	204		166	166							
vC2, stage 2 conf vol	96	166		83	242							
vCu, unblocked vol	300	370	121	249	409	70	140			242		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	97	100	100	100	100			99		
cM capacity (veh/h)	659	590	907	684	567	979	1441			1321		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	92	0	0	110	132	13	93	47
Volume Left	68	0	0	0	0	13	0	0
Volume Right	24	0	0	0	77	0	0	0
cSH	709	1700	1700	1700	1700	1321	1700	1700
Volume to Capacity	0.13	0.00	0.00	0.06	0.08	0.01	0.05	0.03
Queue Length 95th (ft)	11	0	0	0	0	1	0	0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	B	A				A		
Approach Delay (s)	10.8	0.0	0.0			0.7		
Approach LOS	B	A						

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	21.2%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
104: Orange Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	136	0	32	0	0	0	0	124	49	17	252	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.79	0.79	0.79	0.90	0.90	0.90	0.79	0.79	0.79
Hourly flow rate (vph)	146	0	34	0	0	0	0	138	54	22	319	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	368	527	96	431	554	159	319			192		
vC1, stage 1 conf vol	165	165		362	362							
vC2, stage 2 conf vol	203	362		69	192							
vCu, unblocked vol	368	527	96	431	554	159	319			192		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	100	96	100	100	100	100			98		
cM capacity (veh/h)	615	508	941	534	496	857	1238			1379		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	181	0	0	92	100	22	213	106
Volume Left	146	0	0	0	0	22	0	0
Volume Right	34	0	0	0	54	0	0	0
cSH	659	1700	1700	1700	1700	1379	1700	1700
Volume to Capacity	0.27	0.00	0.00	0.05	0.06	0.02	0.13	0.06
Queue Length 95th (ft)	28	0	0	0	0	1	0	0
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Lane LOS	B	A				A		
Approach Delay (s)	12.5	0.0	0.0			0.5		
Approach LOS	B	A						

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	29.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												
Volume (veh/h)	0	464	286	0	0	0	0	0	0	142	129	0
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	527	325	0	0	0	0	0	0	167	152	0
Approach Volume (veh/h)		852			0			0			319	
Crossing Volume (veh/h)		319			0			694			0	
High Capacity (veh/h)		1078			1385			798			1385	
High v/c (veh/h)		0.79			0.00			0.00			0.23	
Low Capacity (veh/h)		884			1161			635			1161	
Low v/c (veh/h)		0.96			0.00			0.00			0.27	

Intersection Summary			
Maximum v/c High	0.79		
Maximum v/c Low	0.96		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis
105: SR 99 South Offramp & White Bridge Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												
Volume (veh/h)	0	169	286	0	0	0	0	0	0	260	234	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	184	311	0	0	0	0	0	0	321	289	0
Approach Volume (veh/h)		495			0			0			610	
Crossing Volume (veh/h)		610			0			505			0	
High Capacity (veh/h)		855			1385			930			1385	
High v/c (veh/h)		0.58			0.00			0.00			0.44	
Low Capacity (veh/h)		685			1161			751			1161	
Low v/c (veh/h)		0.72			0.00			0.00			0.53	

Intersection Summary				
Maximum v/c High	0.58			
Maximum v/c Low	0.72			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	

HCM Unsignalized Intersection Capacity Analysis
106: SR 99 North Onramp & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												Yes
Volume (veh/h)	0	0	0	23	222	0	0	0	0	0	247	137
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.92	0.92	0.92	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	28	271	0	0	0	0	0	309	171
Approach Volume (veh/h)		0			299			0			309	
Crossing Volume (veh/h)		337			0			0			299	
High Capacity (veh/h)		1063			1385			1385			1095	
High v/c (veh/h)		0.00			0.22			0.00			0.28	
Low Capacity (veh/h)		870			1161			1161			899	
Low v/c (veh/h)		0.00			0.26			0.00			0.34	

Intersection Summary				
Maximum v/c High	0.28			
Maximum v/c Low	0.34			
Intersection Capacity Utilization	32.6%	ICU Level of Service		A

HCM Unsignalized Intersection Capacity Analysis
106: SR 99 North Onramp & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												Yes
Volume (veh/h)	0	0	0	33	215	0	0	0	0	0	463	638
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.92	0.92	0.92	0.71	0.71	0.71
Hourly flow rate (vph)	0	0	0	42	276	0	0	0	0	0	652	899
Approach Volume (veh/h)		0			318			0			652	
Crossing Volume (veh/h)		694			0			0			318	
High Capacity (veh/h)		798			1385			1385			1079	
High v/c (veh/h)		0.00			0.23			0.00			0.60	
Low Capacity (veh/h)		635			1161			1161			884	
Low v/c (veh/h)		0.00			0.27			0.00			0.74	

Intersection Summary				
Maximum v/c High	0.60			
Maximum v/c Low	0.74			
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	457	70	0	0	0	0	0	419	34	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	502	77	0	0	0	0	0	493	40	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											576	
pX, platoon unblocked												
vC, conflicting volume	164	533	0	551	513	184	0			533		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	164	533	0	551	513	184	0			533		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	36	83	100	100	100	100	100			100		
cM capacity (veh/h)	785	451	1084	362	463	826	1622			1031		

Direction, Lane #	SE 1	SE 2	NE 1	NE 2	NE 3
Volume Total	528	51	197	197	139
Volume Left	502	0	0	0	0
Volume Right	0	0	0	0	40
cSH	758	451	1700	1700	1700
Volume to Capacity	0.70	0.11	0.12	0.12	0.08
Queue Length 95th (ft)	144	10	0	0	0
Control Delay (s)	19.9	14.0	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	19.4		0.0		
Approach LOS	C				

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	154	127	0	0	0	0	0	370	35	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	171	141	0	0	0	0	0	416	39	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											576	
pX, platoon unblocked												
vC, conflicting volume	139	455	0	506	435	158	0			455		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139	455	0	506	435	158	0			455		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	72	100	100	100	100	100			100		
cM capacity (veh/h)	818	500	1084	351	513	859	1622			1102		

Direction, Lane #	SE 1	SE 2	NE 1	NE 2	NE 3
Volume Total	218	94	166	166	122
Volume Left	171	0	0	0	0
Volume Right	0	0	0	0	39
cSH	719	500	1700	1700	1700
Volume to Capacity	0.30	0.19	0.10	0.10	0.07
Queue Length 95th (ft)	32	17	0	0	0
Control Delay (s)	12.2	13.9	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	12.7		0.0		
Approach LOS	B				

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	0	17	55	210	658	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.75	0.75	0.75	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	23	73	226	708	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											292	
pX, platoon unblocked												
vC, conflicting volume	772	1159	0	1159	1159	236	0			708		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	772	1159	0	1159	1159	236	0			708		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	86	90	86			100		
cM capacity (veh/h)	210	167	1084	135	167	766	1622			887		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3
Volume Total	15	81	367	283	283
Volume Left	0	0	226	0	0
Volume Right	0	73	0	0	0
cSH	167	574	1622	1700	1700
Volume to Capacity	0.09	0.14	0.14	0.17	0.17
Queue Length 95th (ft)	7	12	12	0	0
Control Delay (s)	28.6	12.3	5.1	0.0	0.0
Lane LOS	D	B	A		
Approach Delay (s)	14.9		2.0		
Approach LOS	B				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	27.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	0	36	60	210	314	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.73	0.73	0.73	0.90	0.90	0.90	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	49	82	233	349	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											292	
pX, platoon unblocked												
vC, conflicting volume	690	816	0	816	816	116	0			349		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	690	816	0	816	816	116	0			349		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	81	91	86			100		
cM capacity (veh/h)	231	265	1084	239	265	914	1622			1207		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3
Volume Total	33	99	303	140	140
Volume Left	0	0	233	0	0
Volume Right	0	82	0	0	0
cSH	265	649	1622	1700	1700
Volume to Capacity	0.12	0.15	0.14	0.08	0.08
Queue Length 95th (ft)	10	13	13	0	0
Control Delay (s)	20.5	11.5	6.1	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	13.8		3.2		
Approach LOS	B				

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	21.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	15	376	335	0	27	303
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.47	0.47	0.92	0.92	0.85	0.85
Hourly flow rate (vph)	32	800	364	0	32	356
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type			None			None
Median storage veh)						
Upstream signal (ft)			442			
pX, platoon unblocked						
vC, conflicting volume	606	364			364	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606	364			364	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	0			97	
cM capacity (veh/h)	417	633			1191	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2	SW 3
Volume Total	832	364	32	178	178
Volume Left	32	0	32	0	0
Volume Right	800	0	0	0	0
cSH	658	1700	1191	1700	1700
Volume to Capacity	1.26	0.21	0.03	0.10	0.10
Queue Length 95th (ft)	790	0	2	0	0
Control Delay (s)	147.2	0.0	8.1	0.0	0.0
Lane LOS	F		A		
Approach Delay (s)	147.2	0.0	0.7		
Approach LOS	F				

Intersection Summary			
Average Delay	77.5		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	25	229	201	0	19	706
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.92	0.92	0.89	0.89
Hourly flow rate (vph)	28	257	218	0	21	793
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type			None			None
Median storage veh)						
Upstream signal (ft)			442			
pX, platoon unblocked						
vC, conflicting volume	658	218			218	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	658	218			218	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	67			98	
cM capacity (veh/h)	391	786			1348	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2	SW 3
Volume Total	285	218	21	397	397
Volume Left	28	0	21	0	0
Volume Right	257	0	0	0	0
cSH	871	1700	1348	1700	1700
Volume to Capacity	0.33	0.13	0.02	0.23	0.23
Queue Length 95th (ft)	36	0	1	0	0
Control Delay (s)	12.1	0.0	7.7	0.0	0.0
Lane LOS	B		A		
Approach Delay (s)	12.1	0.0	0.2		
Approach LOS	B				

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	11	0	0	48	0	339	0	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0		4.0			
Lane Util. Factor		1.00			1.00		1.00		1.00			
Frt		1.00			1.00		1.00		0.85			
Flt Protected		1.00			1.00		0.95		1.00			
Satd. Flow (prot)		2049			2049		1947		1742			
Flt Permitted		1.00			1.00		0.95		1.00			
Satd. Flow (perm)		2049			2049		1947		1742			
Peak-hour factor, PHF	0.57	0.57	0.57	0.63	0.63	0.63	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	19	0	0	76	0	381	0	17	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	0	19	0	0	76	0	381	0	7	0	0	0
Turn Type	Perm						Prot		Perm	Prot		custom
Protected Phases		6			2		7	4		3		8
Permitted Phases	6								4			
Actuated Green, G (s)		7.5			7.5		10.6		10.6			
Effective Green, g (s)		7.5			7.5		10.6		10.6			
Actuated g/C Ratio		0.29			0.29		0.41		0.41			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		589			589		791		707			
v/s Ratio Prot		0.01			c0.04		c0.20					
v/s Ratio Perm									0.00			
v/c Ratio		0.03			0.13		0.48		0.01			
Uniform Delay, d1		6.7			6.9		5.7		4.6			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			0.1		0.5		0.0			
Delay (s)		6.7			7.0		6.2		4.6			
Level of Service		A			A		A		A			
Approach Delay (s)		6.7			7.0			6.1			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	26.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	15	0	0	47	0	208	0	18	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0		4.0			
Lane Util. Factor		1.00			1.00		1.00		1.00			
Frt		1.00			1.00		1.00		0.85			
Flt Protected		1.00			1.00		0.95		1.00			
Satd. Flow (prot)		2049			2049		1947		1742			
Flt Permitted		1.00			1.00		0.95		1.00			
Satd. Flow (perm)		2049			2049		1947		1742			
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	0	20	0	0	64	0	224	0	19	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	14	0	0	0
Lane Group Flow (vph)	0	20	0	0	64	0	224	0	5	0	0	0
Turn Type	Perm						Prot		Perm	Prot		custom
Protected Phases		6			2		7	4		3		8
Permitted Phases	6								4			
Actuated Green, G (s)		10.3			10.3		6.2		6.2			
Effective Green, g (s)		10.3			10.3		6.2		6.2			
Actuated g/C Ratio		0.42			0.42		0.25		0.25			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		861			861		493		441			
v/s Ratio Prot		0.01			c0.03		c0.12					
v/s Ratio Perm									0.00			
v/c Ratio		0.02			0.07		0.45		0.01			
Uniform Delay, d1		4.2			4.2		7.7		6.9			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			0.0		0.7		0.0			
Delay (s)		4.2			4.3		8.4		6.9			
Level of Service		A			A		A		A			
Approach Delay (s)		4.2			4.3			8.3			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	24.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	39	7	9	0	0	142	177	13	220	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.95		1.00	1.00			0.92		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1944		1947	2049			1878		1947	2037	
Flt Permitted		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1944		1947	2049			1878		1947	2037	
Peak-hour factor, PHF	0.65	0.65	0.65	0.80	0.80	0.80	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	115	60	9	11	0	0	154	192	16	272	11
RTOR Reduction (vph)	0	35	0	0	0	0	0	74	0	0	2	0
Lane Group Flow (vph)	0	140	0	9	11	0	0	272	0	16	281	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		8.2		0.4	12.6			10.0		0.4	14.4	
Effective Green, g (s)		8.2		0.4	12.6			10.0		0.4	14.4	
Actuated g/C Ratio		0.23		0.01	0.36			0.29		0.01	0.41	
Clearance Time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		455		22	738			537		22	838	
v/s Ratio Prot		c0.07		c0.00	0.01			c0.14		0.01	c0.14	
v/s Ratio Perm												
v/c Ratio		0.31		0.41	0.01			0.51		0.73	0.34	
Uniform Delay, d1		11.1		17.2	7.2			10.4		17.2	7.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4		11.9	0.0			0.8		76.4	0.2	
Delay (s)		11.4		29.1	7.2			11.2		93.6	7.3	
Level of Service		B		C	A			B		F	A	
Approach Delay (s)		11.4			17.1			11.2			11.9	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	35.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
111: Fulton St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	58	31	30	18	0	0	86	111	0	533	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.95		1.00	1.00			0.92			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1942		1947	2049			1875			2039	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1942		1947	2049			1875			2039	
Peak-hour factor, PHF	0.82	0.82	0.82	0.48	0.48	0.48	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	71	38	62	38	0	0	93	121	0	711	25
RTOR Reduction (vph)	0	32	0	0	0	0	0	57	0	0	1	0
Lane Group Flow (vph)	0	77	0	62	38	0	0	157	0	0	735	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		7.4		2.0	13.4			17.6			26.1	
Effective Green, g (s)		7.4		2.0	13.4			17.6			26.1	
Actuated g/C Ratio		0.16		0.04	0.28			0.37			0.55	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		303		82	578			695			1120	
v/s Ratio Prot		c0.04		c0.03	0.02			0.08			c0.36	
v/s Ratio Perm												
v/c Ratio		0.25		0.76	0.07			0.23			0.66	
Uniform Delay, d1		17.6		22.5	12.5			10.3			7.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.4		32.1	0.0			0.2			1.4	
Delay (s)		18.1		54.6	12.5			10.4			8.9	
Level of Service		B		D	B			B			A	
Approach Delay (s)		18.1			38.6			10.4			8.9	
Approach LOS		B			D			B			A	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	258	0	14	220	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	0.95		0.95	1.00		
Satd. Flow (prot)	1947		1947	2049		
Flt Permitted	0.95		0.76	1.00		
Satd. Flow (perm)	1947		1552	2049		
Peak-hour factor, PHF	0.70	0.70	0.84	0.84	0.92	0.92
Adj. Flow (vph)	369	0	17	262	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	369	0	17	262	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	14.6		7.8	7.8		
Effective Green, g (s)	14.6		7.8	7.8		
Actuated g/C Ratio	0.48		0.26	0.26		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	935		398	526		
v/s Ratio Prot	c0.19			c0.13		
v/s Ratio Perm			0.01			
v/c Ratio	0.39		0.04	0.50		
Uniform Delay, d1	5.1		8.5	9.6		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	0.3		0.0	0.7		
Delay (s)	5.3		8.5	10.4		
Level of Service	A		A	B		
Approach Delay (s)	5.3			10.3	0.0	
Approach LOS	A			B	A	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	30.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	169	0	47	159	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	0.95		0.95	1.00		
Satd. Flow (prot)	1947		1947	2049		
Flt Permitted	0.95		0.76	1.00		
Satd. Flow (perm)	1947		1552	2049		
Peak-hour factor, PHF	0.81	0.81	0.83	0.83	0.92	0.92
Adj. Flow (vph)	209	0	57	192	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	209	0	57	192	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	12.5		6.7	6.7		
Effective Green, g (s)	12.5		6.7	6.7		
Actuated g/C Ratio	0.46		0.25	0.25		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	895		382	505		
v/s Ratio Prot	c0.11			c0.09		
v/s Ratio Perm			0.04			
v/c Ratio	0.23		0.15	0.38		
Uniform Delay, d1	4.4		8.0	8.5		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	0.1		0.2	0.5		
Delay (s)	4.6		8.2	9.0		
Level of Service	A		A	A		
Approach Delay (s)	4.6			8.8	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	27.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	44	6	16	46	0	0	0	0	72	327	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.82	0.82	0.82
Hourly flow rate (vph)	0	53	7	18	51	0	0	0	0	88	399	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								344			414	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	603	578	402	608	582	0	406			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	567	541	358	572	544	0	362			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	87	99	95	88	100	100			95		
cM capacity (veh/h)	362	407	660	354	405	1085	1150			1623		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	60	68	0	0	88	406
Volume Left	0	18	0	0	88	0
Volume Right	7	0	0	0	0	7
cSH	427	391	1700	1700	1623	1700
Volume to Capacity	0.14	0.17	0.00	0.00	0.05	0.24
Queue Length 95th (ft)	12	16	0	0	4	0
Control Delay (s)	14.8	16.1	0.0	0.0	7.3	0.0
Lane LOS	B	C			A	
Approach Delay (s)	14.8	16.1	0.0		1.3	
Approach LOS	B	C				

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
113: L St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	20	17	55	74	0	0	0	0	31	351	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.75	0.75	0.75	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	26	22	73	99	0	0	0	0	38	433	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								344			414	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	560	511	435	545	512	0	436			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516	464	384	499	465	0	385			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	94	97	82	79	100	100			98		
cM capacity (veh/h)	368	462	634	417	461	1085	1120			1623		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	48	172	0	0	38	436
Volume Left	0	73	0	0	38	0
Volume Right	22	0	0	0	0	2
cSH	527	441	1700	1700	1623	1700
Volume to Capacity	0.09	0.39	0.00	0.00	0.02	0.26
Queue Length 95th (ft)	7	45	0	0	2	0
Control Delay (s)	12.5	18.3	0.0	0.0	7.3	0.0
Lane LOS	B	C			A	
Approach Delay (s)	12.5	18.3	0.0		0.6	
Approach LOS	B	C				

Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	11	108	0	0	15	15	46	348	29	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.63	0.63	0.63	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	14	138	0	0	24	24	52	391	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								318			425	
pX, platoon unblocked												
vC, conflicting volume	335	527	0	580	511	212	0			424		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	335	527	0	580	511	212	0			424		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	69	100	100	95	97	97			100		
cM capacity (veh/h)	540	440	1084	294	450	794	1622			1132		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	153	48	247	228
Volume Left	14	0	52	0
Volume Right	0	24	0	33
cSH	448	574	1622	1700
Volume to Capacity	0.34	0.08	0.03	0.13
Queue Length 95th (ft)	37	7	2	0
Control Delay (s)	17.1	11.8	1.7	0.0
Lane LOS	C	B	A	
Approach Delay (s)	17.1	11.8	0.9	
Approach LOS	C	B		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
114: L St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	18	36	0	0	108	51	22	257	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.74	0.74	0.74	0.96	0.96	0.96	0.92	0.92	0.92
Hourly flow rate (vph)	23	46	0	0	146	69	23	268	19	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								318			425	
pX, platoon unblocked												
vC, conflicting volume	322	332	0	346	323	143	0			286		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322	332	0	346	323	143	0			286		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	92	100	100	75	92	99			100		
cM capacity (veh/h)	448	578	1084	543	585	878	1622			1273		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	68	215	157	153
Volume Left	23	0	23	0
Volume Right	0	69	0	19
cSH	527	655	1622	1700
Volume to Capacity	0.13	0.33	0.01	0.09
Queue Length 95th (ft)	11	36	1	0
Control Delay (s)	12.9	13.2	1.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.9	13.2	0.6	
Approach LOS	B	B		

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	29	32	0	0	0	0	0	0	185	397	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		1.00								1.00	1.00	
Frt		0.93								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1903								1947	2046	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1903								1947	2046	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	32	36	0	0	0	0	0	0	208	446	4
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	41	0	0	0	0	0	0	0	208	449	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		6.2								10.9	10.9	
Effective Green, g (s)		6.2								10.9	10.9	
Actuated g/C Ratio		0.25								0.43	0.43	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		470								846	889	
v/s Ratio Prot		c0.02								0.11	c0.22	
v/s Ratio Perm												
v/c Ratio		0.09								0.25	0.51	
Uniform Delay, d1		7.3								4.5	5.1	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		0.1								0.2	0.5	
Delay (s)		7.4								4.6	5.6	
Level of Service		A								A	A	
Approach Delay (s)		7.4			0.0			0.0			5.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	25.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	29	34	0	0	0	0	0	0	124	336	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		1.00								1.00	1.00	
Frt		0.93								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1900								1947	2039	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1900								1947	2039	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	35	41	0	0	0	0	0	0	148	400	13
RTOR Reduction (vph)	0	32	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	44	0	0	0	0	0	0	0	148	411	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		6.5								6.9	14.5	
Effective Green, g (s)		6.5								6.9	14.5	
Actuated g/C Ratio		0.22								0.24	0.50	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		426								463	1020	
v/s Ratio Prot		c0.02								0.08	c0.20	
v/s Ratio Perm												
v/c Ratio		0.10								0.32	0.40	
Uniform Delay, d1		8.9								9.1	4.5	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		0.1								0.4	0.3	
Delay (s)		9.0								9.5	4.8	
Level of Service		A								A	A	
Approach Delay (s)		9.0			0.0			0.0			6.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	29.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	33	197	0	0	0	0	0	305	58	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.95						0.95				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3865						3799				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3865						3799				
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	38	224	0	0	0	0	0	335	64	0	0	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	32	0	0	0	0
Lane Group Flow (vph)	0	236	0	0	0	0	0	367	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		7.2						7.8				
Effective Green, g (s)		7.2						7.8				
Actuated g/C Ratio		0.31						0.34				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1210						1288				
v/s Ratio Prot								c0.10				
v/s Ratio Perm		0.06										
v/c Ratio		0.19						0.29				
Uniform Delay, d1		5.8						5.6				
Progression Factor		1.00						1.00				
Incremental Delay, d2		0.1						0.1				
Delay (s)		5.9						5.7				
Level of Service		A						A				
Approach Delay (s)		5.9			0.0			5.7			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	23.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	57	94	0	0	0	0	0	249	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.95						0.95				
Frt		1.00						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		3821						3755				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		3821						3755				
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	63	104	0	0	0	0	0	268	83	0	0	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	124	0	0	0	0	0	295	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		7.0						7.1				
Effective Green, g (s)		7.0						7.1				
Actuated g/C Ratio		0.32						0.32				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1210						1206				
v/s Ratio Prot								c0.08				
v/s Ratio Perm		0.03										
v/c Ratio		0.10						0.24				
Uniform Delay, d1		5.3						5.5				
Progression Factor		1.00						1.00				
Incremental Delay, d2		0.0						0.1				
Delay (s)		5.4						5.6				
Level of Service		A						A				
Approach Delay (s)		5.4			0.0			5.6			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	22.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
117: N St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	71	14	53	39	0	0	0	0	162	526	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.79	0.79	0.79	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	0	84	16	67	49	0	0	0	0	193	626	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								404			486	
pX, platoon unblocked												
vC, conflicting volume	1044	1020	634	1070	1027	0	642			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1044	1020	634	1070	1027	0	642			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	60	97	44	76	100	100			88		
cM capacity (veh/h)	154	209	479	121	206	1085	943			1623		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2
Volume Total	0	100	67	49	0	0	193	642
Volume Left	0	0	67	0	0	0	193	0
Volume Right	0	16	0	0	0	0	0	15
cSH	1700	230	121	206	1700	1700	1623	1700
Volume to Capacity	0.00	0.43	0.56	0.24	0.00	0.00	0.12	0.38
Queue Length 95th (ft)	0	51	67	23	0	0	10	0
Control Delay (s)	0.0	32.2	66.8	27.8	0.0	0.0	7.5	0.0
Lane LOS	A	D	F	D			A	
Approach Delay (s)	32.2		50.3		0.0		1.7	
Approach LOS	D		F					

Intersection Summary			
Average Delay	10.0		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
117: N St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	22	9	106	64	0	0	0	0	42	348	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.57	0.57	0.57	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	40	16	186	112	0	0	0	0	49	409	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								404			492	
pX, platoon unblocked												
vC, conflicting volume	564	508	409	545	508	0	409			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564	508	409	545	508	0	409			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	91	97	53	75	100	100			97		
cM capacity (veh/h)	345	453	642	399	453	1085	1149			1623		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2
Volume Total	0	56	186	112	0	0	49	409
Volume Left	0	0	186	0	0	0	49	0
Volume Right	0	16	0	0	0	0	0	0
cSH	1700	496	399	453	1700	1700	1623	1700
Volume to Capacity	0.00	0.11	0.47	0.25	0.00	0.00	0.03	0.24
Queue Length 95th (ft)	0	10	60	24	0	0	2	0
Control Delay (s)	0.0	13.2	21.7	15.5	0.0	0.0	7.3	0.0
Lane LOS	A	B	C	C			A	
Approach Delay (s)	13.2		19.3		0.0		0.8	
Approach LOS	B		C					

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
118: N St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	59	101	0	0	63	24	34	272	18	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.95				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		0.99				
Satd. Flow (prot)	1947	2049			2049	1742		3840				
Flt Permitted	0.71	1.00			1.00	1.00		0.99				
Satd. Flow (perm)	1459	2049			2049	1742		3840				
Peak-hour factor, PHF	0.82	0.82	0.82	0.91	0.91	0.91	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	72	123	0	0	69	26	41	328	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	18	0	9	0	0	0	0
Lane Group Flow (vph)	72	123	0	0	69	8	0	382	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	7.4	7.4			7.4	7.4		8.0				
Effective Green, g (s)	7.4	7.4			7.4	7.4		8.0				
Actuated g/C Ratio	0.32	0.32			0.32	0.32		0.34				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)	461	648			648	551		1313				
v/s Ratio Prot		c0.06			0.03							
v/s Ratio Perm	0.05					0.00		0.10				
v/c Ratio	0.16	0.19			0.11	0.01		0.29				
Uniform Delay, d1	5.8	5.8			5.7	5.5		5.6				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.2	0.1			0.1	0.0		0.1				
Delay (s)	5.9	6.0			5.7	5.5		5.8				
Level of Service	A	A			A	A		A				
Approach Delay (s)		5.9			5.7			5.8			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	23.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	42	0	0	120	44	18	282	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.95				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1947	2049			2049	1742		3869				
Flt Permitted	0.63	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1292	2049			2049	1742		3869				
Peak-hour factor, PHF	0.72	0.72	0.72	0.59	0.59	0.59	0.75	0.75	0.75	0.92	0.92	0.92
Adj. Flow (vph)	42	58	0	0	203	75	24	376	9	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	49	0	3	0	0	0	0
Lane Group Flow (vph)	42	58	0	0	203	26	0	406	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	8.4	8.4			8.4	8.4		8.3				
Effective Green, g (s)	8.4	8.4			8.4	8.4		8.3				
Actuated g/C Ratio	0.34	0.34			0.34	0.34		0.34				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)	439	697			697	592		1300				
v/s Ratio Prot		0.03			c0.10							
v/s Ratio Perm	0.03					0.01		0.11				
v/c Ratio	0.10	0.08			0.29	0.04		0.31				
Uniform Delay, d1	5.6	5.5			6.0	5.5		6.1				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.1	0.1			0.2	0.0		0.1				
Delay (s)	5.7	5.6			6.2	5.5		6.2				
Level of Service	A	A			A	A		A				
Approach Delay (s)		5.6			6.0			6.2			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	24.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	20	460	279	27	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3842		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3842		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	500	303	29	16	65
RTOR Reduction (vph)	0	0	14	0	0	51
Lane Group Flow (vph)	22	500	318	0	16	14
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	0.6	13.2	8.6		6.0	6.0
Effective Green, g (s)	0.6	13.2	8.6		6.0	6.0
Actuated g/C Ratio	0.02	0.49	0.32		0.22	0.22
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	43	1889	1215		429	384
v/s Ratio Prot	0.01	c0.13	0.08		0.01	
v/s Ratio Perm						c0.01
v/c Ratio	0.51	0.26	0.26		0.04	0.04
Uniform Delay, d1	13.2	4.1	6.9		8.3	8.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	9.9	0.1	0.1		0.0	0.0
Delay (s)	23.1	4.2	7.0		8.4	8.4
Level of Service	C	A	A		A	A
Approach Delay (s)		5.0	7.0		8.4	
Approach LOS		A	A		A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	27.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
119: E Church Ave &

4/10/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	16	538	443	22	18	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3865		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3865		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	585	482	24	20	46
RTOR Reduction (vph)	0	0	7	0	0	36
Lane Group Flow (vph)	17	585	499	0	20	10
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	0.6	14.5	9.9		6.1	6.1
Effective Green, g (s)	0.6	14.5	9.9		6.1	6.1
Actuated g/C Ratio	0.02	0.51	0.35		0.21	0.21
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	41	1974	1338		415	372
v/s Ratio Prot	0.01	c0.15	c0.13		c0.01	
v/s Ratio Perm						0.01
v/c Ratio	0.41	0.30	0.37		0.05	0.03
Uniform Delay, d1	13.8	4.1	7.0		8.9	8.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	0.1	0.2		0.0	0.0
Delay (s)	20.5	4.2	7.2		9.0	8.9
Level of Service	C	A	A		A	A
Approach Delay (s)		4.6	7.2		8.9	
Approach LOS		A	A		A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	28.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
120: W McKinley Avenue & SR 99 Southbound Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	150	288	322	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.81	0.81	0.92	0.92
Hourly flow rate (vph)	276	174	356	398	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1223		
pX, platoon unblocked					0.86	
vC, conflicting volume			450		1471	363
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		1467	363
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			68		100	100
cM capacity (veh/h)			1110		82	682

Direction, Lane #	EB 1	WB 1
Volume Total	450	753
Volume Left	0	356
Volume Right	174	0
cSH	1700	1110
Volume to Capacity	0.26	0.32
Queue Length 95th (ft)	0	35
Control Delay (s)	0.0	6.8
Lane LOS		A
Approach Delay (s)	0.0	6.8
Approach LOS		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
120: W McKinley Avenue & SR 99 Southbound Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	288	113	227	511	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	360	141	241	544	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1173		
pX, platoon unblocked					0.91	
vC, conflicting volume			501		1457	431
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			501		1453	431
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			77		100	100
cM capacity (veh/h)			1063		101	625

Direction, Lane #	EB 1	WB 1
Volume Total	501	785
Volume Left	0	241
Volume Right	141	0
cSH	1700	1063
Volume to Capacity	0.29	0.23
Queue Length 95th (ft)	0	22
Control Delay (s)	0.0	5.1
Lane LOS		A
Approach Delay (s)	0.0	5.1
Approach LOS		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
121: W McKinley Ave &

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	223	0	0	474	9	131	8	135	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.88	0.88	0.83	0.83	0.92	0.86	0.92	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	5	253	0	0	571	10	152	9	157	2	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					869							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	581			253			841	845	253	845	840	576
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			253			679	684	253	683	678	348
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			48	97	80	99	100	100
cM capacity (veh/h)	966			1312			291	296	785	227	299	558

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	259	581	318	3
Volume Left	5	0	152	2
Volume Right	0	10	157	1
cSH	966	1700	423	283
Volume to Capacity	0.01	0.34	0.75	0.01
Queue Length 95th (ft)	0	0	155	1
Control Delay (s)	0.2	0.0	35.1	17.9
Lane LOS	A		E	C
Approach Delay (s)	0.2	0.0	35.1	17.9
Approach LOS			E	C

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
121: W McKinley Ave &

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	260	0	0	533	2	204	3	287	18	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.79	0.79	0.93	0.93	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	2	329	0	0	573	2	229	3	322	20	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					819							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	575			329			917	909	329	909	908	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			329			805	794	329	795	793	395
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			7	99	55	86	100	98
cM capacity (veh/h)	974			1230			247	268	712	139	268	548

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	331	575	555	29
Volume Left	2	0	229	20
Volume Right	0	2	322	10
cSH	974	1700	399	184
Volume to Capacity	0.00	0.34	1.39	0.16
Queue Length 95th (ft)	0	0	680	14
Control Delay (s)	0.1	0.0	218.2	28.2
Lane LOS	A		F	D
Approach Delay (s)	0.1	0.0	218.2	28.2
Approach LOS			F	D

Intersection Summary			
Average Delay	81.8		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
122: W McKinley Ave & Golden State Blvd

4/9/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	39	280	473	96	243	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3518	3450		1770	1583
Flt Permitted		0.84	1.00		0.95	1.00
Satd. Flow (perm)		2964	3450		1770	1583
Peak-hour factor, PHF	0.74	0.74	0.84	0.84	0.75	0.75
Adj. Flow (vph)	53	378	563	114	324	69
RTOR Reduction (vph)	0	0	43	0	0	41
Lane Group Flow (vph)	0	431	634	0	324	28
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		16.0	16.0		16.0	16.0
Effective Green, g (s)		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.40	0.40		0.40	0.40
Clearance Time (s)		4.0	4.0		4.0	4.0
Lane Grp Cap (vph)		1186	1380		708	633
v/s Ratio Prot			c0.18		c0.18	
v/s Ratio Perm		0.15				0.02
v/c Ratio		0.36	0.46		0.46	0.04
Uniform Delay, d1		8.4	8.8		8.8	7.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	1.1		2.1	0.1
Delay (s)		9.3	9.9		10.9	7.5
Level of Service		A	A		B	A
Approach Delay (s)		9.3	9.9		10.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
122: W McKinley Ave & Golden State Blvd

4/9/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	82	426	459	144	118	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3511	3412		1770	1583
Flt Permitted		0.79	1.00		0.95	1.00
Satd. Flow (perm)		2805	3412		1770	1583
Peak-hour factor, PHF	0.89	0.89	0.98	0.98	0.83	0.83
Adj. Flow (vph)	92	479	468	147	142	66
RTOR Reduction (vph)	0	0	75	0	0	40
Lane Group Flow (vph)	0	571	540	0	142	26
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		16.0	16.0		16.0	16.0
Effective Green, g (s)		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.40	0.40		0.40	0.40
Clearance Time (s)		4.0	4.0		4.0	4.0
Lane Grp Cap (vph)		1122	1365		708	633
v/s Ratio Prot			0.16		c0.08	
v/s Ratio Perm		c0.20				0.02
v/c Ratio		0.51	0.40		0.20	0.04
Uniform Delay, d1		9.0	8.6		7.8	7.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.7	0.9		0.6	0.1
Delay (s)		10.7	9.4		8.5	7.4
Level of Service		B	A		A	A
Approach Delay (s)		10.7	9.4		8.1	
Approach LOS		B	A		A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
123: W McKinley Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	437	20	36	354	69	66	115	8	152	442	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3453		1770	3506		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3453		1770	3506		1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.81	0.81	0.81	0.86	0.86	0.86	0.89	0.89	0.89
Adj. Flow (vph)	115	553	25	44	437	85	77	134	9	171	497	222
RTOR Reduction (vph)	0	0	18	0	20	0	0	5	0	0	0	137
Lane Group Flow (vph)	115	553	7	44	502	0	77	138	0	171	497	85
Turn Type	Prot		custom	Prot			Prot			Prot		custom
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			4									6
Actuated Green, G (s)	7.0	22.4	19.3	3.9	19.3		6.1	15.2		10.2	19.3	15.2
Effective Green, g (s)	7.0	22.4	19.3	3.9	19.3		6.1	15.2		10.2	19.3	15.2
Actuated g/C Ratio	0.10	0.32	0.28	0.06	0.28		0.09	0.22		0.15	0.28	0.22
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.2	5.2	2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	178	1141	440	99	959		155	767		260	983	346
v/s Ratio Prot	c0.06	c0.16		0.02	0.15		0.04	0.04		c0.10	c0.14	
v/s Ratio Perm			0.00									0.05
v/c Ratio	0.65	0.48	0.02	0.44	0.52		0.50	0.18		0.66	0.51	0.25
Uniform Delay, d1	30.1	18.9	18.2	31.8	21.2		30.2	22.1		28.0	21.1	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.9	0.7	0.0	1.2	1.0		0.9	0.3		4.5	0.9	0.8
Delay (s)	36.0	19.6	18.2	32.9	22.3		31.1	22.3		32.5	22.0	23.3
Level of Service	D	B	B	C	C		C	C		C	C	C
Approach Delay (s)		22.3			23.1			25.4			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
123: W McKinley Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	418	28	32	441	93	209	359	19	148	184	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3447		1770	3512		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3447		1770	3512		1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.87	0.87	0.87	0.77	0.77	0.77	0.87	0.87	0.87
Adj. Flow (vph)	266	504	34	37	507	107	271	466	25	170	211	176
RTOR Reduction (vph)	0	0	24	0	21	0	0	5	0	0	0	137
Lane Group Flow (vph)	266	504	10	37	593	0	271	486	0	170	211	39
Turn Type	Prot		custom	Prot			Prot			Prot		custom
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			4									6
Actuated Green, G (s)	11.1	29.8	22.8	4.1	22.8		11.1	17.5		10.3	16.7	17.5
Effective Green, g (s)	11.1	29.8	22.8	4.1	22.8		11.1	17.5		10.3	16.7	17.5
Actuated g/C Ratio	0.14	0.37	0.29	0.05	0.29		0.14	0.22		0.13	0.21	0.22
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.2	5.2	2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	247	1327	454	91	989		247	773		229	743	348
v/s Ratio Prot	c0.15	0.14		0.02	c0.17		c0.15	c0.14		0.10	0.06	
v/s Ratio Perm			0.01									0.02
v/c Ratio	1.08	0.38	0.02	0.41	0.60		1.10	0.63		0.74	0.28	0.11
Uniform Delay, d1	34.2	18.1	20.3	36.5	24.4		34.2	28.1		33.3	26.4	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	79.2	0.4	0.0	1.1	1.6		85.7	2.4		10.8	0.5	0.3
Delay (s)	113.4	18.5	20.4	37.6	26.0		119.9	30.4		44.1	26.8	25.1
Level of Service	F	B	C	D	C		F	C		D	C	C
Approach Delay (s)		50.0			26.6			62.3			31.6	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
124: W Olive Ave & SR 99 Southbound Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	303	281	112	276	0	0	0	0	73	0	78
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.86	0.86	0.86	0.92	0.92	0.92	0.91	0.91	0.91
Hourly flow rate (vph)	0	404	375	130	321	0	0	0	0	80	0	86
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	321			779			1012	1173	389	783	1360	160
vC1, stage 1 conf vol							591	591		581	581	
vC2, stage 2 conf vol							421	581		202	779	
vCu, unblocked vol	321			779			1012	1173	389	783	1360	160
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			100	100	100	78	100	90
cM capacity (veh/h)	1236			834			343	345	609	372	246	856

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	269	509	130	160	160	166
Volume Left	0	0	130	0	0	80
Volume Right	0	375	0	0	0	86
cSH	1700	1700	834	1700	1700	526
Volume to Capacity	0.16	0.30	0.16	0.09	0.09	0.32
Queue Length 95th (ft)	0	0	14	0	0	34
Control Delay (s)	0.0	0.0	10.1	0.0	0.0	15.0
Lane LOS			B			B
Approach Delay (s)	0.0		2.9			15.0
Approach LOS						B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
124: W Olive Ave & SR 99 Southbound Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	385	160	199	454	0	0	0	0	73	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	0	464	193	231	528	0	0	0	0	97	0	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			657			1287	1551	328	1223	1647	264
vC1, stage 1 conf vol							560	560		991	991	
vC2, stage 2 conf vol							727	991		232	657	
vCu, unblocked vol	528			657			1287	1551	328	1223	1647	264
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			100	100	100	49	100	81
cM capacity (veh/h)	1035			927			213	222	667	190	177	734

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	309	347	231	264	264	236
Volume Left	0	0	231	0	0	97
Volume Right	0	193	0	0	0	139
cSH	1700	1700	927	1700	1700	337
Volume to Capacity	0.18	0.20	0.25	0.16	0.16	0.70
Queue Length 95th (ft)	0	0	25	0	0	126
Control Delay (s)	0.0	0.0	10.2	0.0	0.0	37.3
Lane LOS			B			E
Approach Delay (s)	0.0		3.1			37.3
Approach LOS						E

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	47	313	0	0	290	26	110	0	169	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	57	382	0	0	309	28	122	0	188	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)									18		
Median type		None			TWLTL						
Median storage veh)					2						
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	336			382			651	833	191	628	819
vC1, stage 1 conf vol							496	496		322	322
vC2, stage 2 conf vol							154	336		305	496
vCu, unblocked vol	336			382			651	833	191	628	819
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	95			100			74	100	77	100	100
cM capacity (veh/h)	1220			1173			474	449	819	448	463

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	57	191	191	206	130	310
Volume Left	57	0	0	0	0	122
Volume Right	0	0	0	0	28	188
cSH	1220	1700	1700	1700	1700	1202
Volume to Capacity	0.05	0.11	0.11	0.12	0.08	0.26
Queue Length 95th (ft)	4	0	0	0	0	26
Control Delay (s)	8.1	0.0	0.0	0.0	0.0	12.5
Lane LOS	A					B
Approach Delay (s)	1.1			0.0		12.5
Approach LOS						B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
125: W Olive Ave & SR 99 Northbound On-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	69	381	0	0	482	70	134	0	176	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.87	0.87	0.87	0.88	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	82	454	0	0	554	80	152	0	200	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)									18		
Median type		None			TWLTL						
Median storage veh)					2						
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	634			454			895	1252	227	985	1212
vC1, stage 1 conf vol							618	618		594	594
vC2, stage 2 conf vol							277	634		391	618
vCu, unblocked vol	634			454			895	1252	227	985	1212
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	91			100			59	100	74	100	100
cM capacity (veh/h)	945			1103			373	318	776	326	354

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	82	227	227	369	265	352
Volume Left	82	0	0	0	0	152
Volume Right	0	0	0	0	80	200
cSH	945	1700	1700	1700	1700	862
Volume to Capacity	0.09	0.13	0.13	0.22	0.16	0.41
Queue Length 95th (ft)	7	0	0	0	0	50
Control Delay (s)	9.2	0.0	0.0	0.0	0.0	15.5
Lane LOS	A					C
Approach Delay (s)	1.4			0.0		15.5
Approach LOS						C

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
126: W Olive Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	399	1	1	268	4	2	0	1	4	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.98	0.98	0.98	0.38	0.38	0.38	0.71	0.71	0.71
Hourly flow rate (vph)	51	487	1	1	273	4	5	0	3	6	0	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	278			488			779	869	244	626	868	139
vC1, stage 1 conf vol							590	590		278	278	
vC2, stage 2 conf vol							189	280		348	590	
vCu, unblocked vol	278			488			779	869	244	626	868	139
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			99	100	100	99	100	94
cM capacity (veh/h)	1282			1072			413	430	757	538	435	884

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	51	324	163	1	182	95	8	6	51
Volume Left	51	0	0	1	0	0	5	6	0
Volume Right	0	0	1	0	0	4	3	0	51
cSH	1282	1700	1700	1072	1700	1700	486	538	884
Volume to Capacity	0.04	0.19	0.10	0.00	0.11	0.06	0.02	0.01	0.06
Queue Length 95th (ft)	3	0	0	0	0	0	1	1	5
Control Delay (s)	7.9	0.0	0.0	8.4	0.0	0.0	12.5	11.8	9.3
Lane LOS	A			A			B	B	A
Approach Delay (s)	0.8			0.0			12.5	9.6	
Approach LOS							B	A	

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
126: W Olive Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	475	1	2	465	6	5	0	2	7	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.86	0.86	0.86	0.58	0.58	0.58	0.78	0.78	0.78
Hourly flow rate (vph)	49	522	1	2	541	7	9	0	3	9	0	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	548			523			948	1174	262	912	1171	274
vC1, stage 1 conf vol							621	621		549	549	
vC2, stage 2 conf vol							326	552		363	622	
vCu, unblocked vol	548			523			948	1174	262	912	1171	274
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	100	100	98	100	93
cM capacity (veh/h)	1018			1040			368	357	737	415	370	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	49	348	175	2	360	187	12	9	51
Volume Left	49	0	0	2	0	0	9	9	0
Volume Right	0	0	1	0	0	7	3	0	51
cSH	1018	1700	1700	1040	1700	1700	429	415	724
Volume to Capacity	0.05	0.20	0.10	0.00	0.21	0.11	0.03	0.02	0.07
Queue Length 95th (ft)	4	0	0	0	0	0	2	2	6
Control Delay (s)	8.7	0.0	0.0	8.5	0.0	0.0	13.6	13.9	10.4
Lane LOS	A			A			B	B	B
Approach Delay (s)	0.8			0.0			13.6	10.9	
Approach LOS							B	B	

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
129: W Belmont Avenue & SR 99 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	151	189	103	196	0	99	7	49	10	0	20
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		0%		
Peak Hour Factor	0.82	0.82	0.82	0.81	0.81	0.81	0.72	0.72	0.72	0.63	0.63	0.63
Hourly flow rate (vph)	0	184	230	127	242	0	138	10	68	16	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	242			415			620	911	121	680	796	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			415			620	911	121	680	796	207
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			58	96	93	94	100	96
cM capacity (veh/h)	1322			1141			327	242	908	277	283	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	123	292	208	161	215	48
Volume Left	0	0	127	0	138	16
Volume Right	0	230	0	0	68	32
cSH	1700	1700	1141	1700	402	490
Volume to Capacity	0.07	0.17	0.11	0.09	0.54	0.10
Queue Length 95th (ft)	0	0	9	0	77	8
Control Delay (s)	0.0	0.0	5.6	0.0	23.8	13.1
Lane LOS			A		C	B
Approach Delay (s)	0.0		3.2		23.8	13.1
Approach LOS					C	B

Intersection Summary				
Average Delay	6.6			
Intersection Capacity Utilization	44.2%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
129: W Belmont Avenue & SR 99 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	280	268	182	362	0	74	4	63	17	0	16
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		0%		
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.89	0.89	0.89	0.75	0.75	0.75
Hourly flow rate (vph)	0	298	285	219	436	0	83	4	71	23	0	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	436			583			1045	1458	218	1099	1315	291
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	436			583			1045	1458	218	1099	1315	291
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			78			43	96	91	81	100	97
cM capacity (veh/h)	1120			987			147	100	786	122	122	705

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	199	384	365	291	158	44
Volume Left	0	0	219	0	83	23
Volume Right	0	285	0	0	71	21
cSH	1700	1700	987	1700	226	203
Volume to Capacity	0.12	0.23	0.22	0.17	0.70	0.22
Queue Length 95th (ft)	0	0	21	0	114	20
Control Delay (s)	0.0	0.0	6.8	0.0	51.3	27.5
Lane LOS			A		F	D
Approach Delay (s)	0.0		3.8		51.3	27.5
Approach LOS					F	D

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
130: W Belmont Avenue & SR 99 NB On-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	40	228	0	0	161	36	136	0	157	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.81	0.81	0.81	0.92	0.92
Hourly flow rate (vph)	42	238	0	0	177	40	168	0	194	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None			None						
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	216			238			409	537	119	399	518
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	216			238			409	537	119	399	518
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	97			100			67	100	79	100	100
cM capacity (veh/h)	1351			1327			514	435	911	412	446

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	121	158	118	99	168	194
Volume Left	42	0	0	0	168	0
Volume Right	0	0	0	40	0	194
cSH	1351	1700	1700	1700	514	911
Volume to Capacity	0.03	0.09	0.07	0.06	0.33	0.21
Queue Length 95th (ft)	2	0	0	0	35	20
Control Delay (s)	2.8	0.0	0.0	0.0	15.4	10.0
Lane LOS	A				C	B
Approach Delay (s)	1.2		0.0		12.5	
Approach LOS					B	

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
130: W Belmont Avenue & SR 99 NB On-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	83	270	0	0	370	92	203	0	128	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.81	0.81	0.81	0.84	0.84	0.84	0.92	0.92
Hourly flow rate (vph)	92	300	0	0	457	114	242	0	152	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None			None						
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	570			300			713	1055	150	848	998
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	570			300			713	1055	150	848	998
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	91			100			19	100	82	100	100
cM capacity (veh/h)	998			1258			297	204	870	195	220

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	192	200	305	266	242	152
Volume Left	92	0	0	0	242	0
Volume Right	0	0	0	114	0	152
cSH	998	1700	1700	1700	297	870
Volume to Capacity	0.09	0.12	0.18	0.16	0.81	0.18
Queue Length 95th (ft)	8	0	0	0	167	16
Control Delay (s)	4.8	0.0	0.0	0.0	54.1	10.0
Lane LOS	A				F	B
Approach Delay (s)	2.3		0.0		37.1	
Approach LOS					E	

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
132: Olive Ave & Fruit Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	260	57	8	256	55	30	19	7	34	76	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97			0.98			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1813			1784			1772	
Flt Permitted	0.47	1.00	1.00	0.56	1.00			0.74			0.90	
Satd. Flow (perm)	874	1863	1583	1043	1813			1359			1620	
Peak-hour factor, PHF	0.78	0.78	0.78	0.70	0.70	0.70	0.77	0.77	0.77	0.78	0.78	0.78
Adj. Flow (vph)	31	333	73	11	366	79	39	25	9	44	97	55
RTOR Reduction (vph)	0	0	45	0	17	0	0	7	0	0	40	0
Lane Group Flow (vph)	31	333	28	11	428	0	0	66	0	0	156	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.8	8.8	8.8	8.8	8.8			6.1			6.1	
Effective Green, g (s)	8.8	8.8	8.8	8.8	8.8			6.1			6.1	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38			0.27			0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	336	716	608	401	697			362			432	
v/s Ratio Prot		0.18			c0.24							
v/s Ratio Perm	0.04		0.02	0.01				0.05			c0.10	
v/c Ratio	0.09	0.47	0.05	0.03	0.61			0.18			0.36	
Uniform Delay, d1	4.5	5.3	4.4	4.4	5.7			6.5			6.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.5	0.0	0.0	1.6			0.2			0.5	
Delay (s)	4.6	5.8	4.5	4.4	7.3			6.7			7.3	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		5.5			7.2			6.7			7.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	22.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
132: Olive Ave & Fruit Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	368	40	14	294	70	103	91	17	50	21	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97			0.99			0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1863	1583	1770	1809			1799			1737	
Flt Permitted	0.47	1.00	1.00	0.48	1.00			0.78			0.78	
Satd. Flow (perm)	869	1863	1583	903	1809			1434			1395	
Peak-hour factor, PHF	0.91	0.91	0.91	0.87	0.87	0.87	0.81	0.81	0.81	0.80	0.80	0.80
Adj. Flow (vph)	69	404	44	16	338	80	127	112	21	62	26	45
RTOR Reduction (vph)	0	0	28	0	16	0	0	9	0	0	30	0
Lane Group Flow (vph)	69	404	16	16	402	0	0	251	0	0	103	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	9.1	9.1	9.1	9.1	9.1			8.2			8.2	
Effective Green, g (s)	9.1	9.1	9.1	9.1	9.1			8.2			8.2	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36			0.32			0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	313	670	569	325	651			465			452	
v/s Ratio Prot		0.22			c0.22							
v/s Ratio Perm	0.08		0.01	0.02				c0.18			0.07	
v/c Ratio	0.22	0.60	0.03	0.05	0.62			0.54			0.23	
Uniform Delay, d1	5.6	6.6	5.2	5.3	6.7			7.0			6.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	1.5	0.0	0.1	1.7			1.3			0.3	
Delay (s)	6.0	8.2	5.3	5.3	8.4			8.3			6.5	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		7.6			8.3			8.3			6.5	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

FRESNO UNDERPASS ALTERNATIVE

HCM Unsignalized Intersection Capacity Analysis
1: Broadway St & Monterey St.

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	58	0	0	92	0	0	0	0	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.40
Hourly flow rate (vph)	0	79	0	0	112	0	0	0	0	0	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	112			79			192	192	79	192	192	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	112			79			192	192	79	192	192	112
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	1477			1519			752	703	981	768	703	941

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	79	112	0	0	20
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	20
cSH	1477	1519	1700	1700	941
Volume to Capacity	0.00	0.00	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	8.9
Lane LOS			A	A	A
Approach Delay (s)	0.0	0.0	0.0	8.9	
Approach LOS			A	A	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	42	0	0	201	0	0	0	0	0	0	76
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.81	0.81	0.81	0.92	0.92	0.92	0.92	0.92	0.66
Hourly flow rate (vph)	0	58	0	0	248	0	0	0	0	0	0	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	248			58			306	306	58	306	306	248
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248			58			306	306	58	306	306	248
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	85
cM capacity (veh/h)	1318			1546			552	607	1008	646	607	791

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	58	248	0	0	115
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	115
cSH	1318	1546	1700	1700	791
Volume to Capacity	0.00	0.00	0.00	0.00	0.15
Queue Length 95th (ft)	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	10.3
Lane LOS			A	A	B
Approach Delay (s)	0.0	0.0	0.0	10.3	
Approach LOS			A	B	

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	22.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Van Ness Ave & San Benito St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	268	0	0	196	47	166	82	62	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.90	0.90	0.90	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	22	315	0	0	218	52	195	96	73	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	127	210	145	125	244	121
Volume Left (vph)	22	0	0	0	195	0
Volume Right (vph)	0	0	0	52	0	73
Hadj (s)	0.12	0.03	0.03	-0.26	0.43	-0.39
Departure Headway (s)	6.1	6.0	6.1	5.8	6.5	5.7
Degree Utilization, x	0.22	0.35	0.25	0.20	0.44	0.19
Capacity (veh/h)	559	572	560	585	529	599
Control Delay (s)	9.6	11.1	10.0	9.1	13.3	8.8
Approach Delay (s)	10.5		9.6		11.8	
Approach LOS	B		A		B	

Intersection Summary			
Delay	10.8		
HCM Level of Service	B		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Van Ness Ave & San Benito St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	78	174	0	0	214	52	141	30	41	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.82	0.82	0.82	0.80	0.80	0.80	0.92	0.92	0.92
Hourly flow rate (vph)	94	210	0	0	261	63	176	38	51	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	164	140	174	150	195	70
Volume Left (vph)	94	0	0	0	176	0
Volume Right (vph)	0	0	0	63	0	51
Hadj (s)	0.32	0.03	0.03	-0.26	0.49	-0.48
Departure Headway (s)	6.1	5.8	5.8	5.5	6.5	5.6
Degree Utilization, x	0.28	0.22	0.28	0.23	0.35	0.11
Capacity (veh/h)	567	595	598	628	521	603
Control Delay (s)	10.2	9.3	9.8	8.9	11.9	8.1
Approach Delay (s)	9.8		9.4		10.9	
Approach LOS	A		A		B	

Intersection Summary			
Delay	10.0		
HCM Level of Service	A		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	126	59	0	6	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.78	0.78	0.60	0.60
Hourly flow rate (vph)	0	156	76	0	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1131				
pX, platoon unblocked						
vC, conflicting volume	76				231	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76				231	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1523				757	986

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	156	76	10	10
Volume Left	0	0	10	0
Volume Right	0	0	0	10
cSH	1700	1700	757	986
Volume to Capacity	0.09	0.04	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	9.8	8.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.3	
Approach LOS			A	

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	256	98	0	16	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.74	0.74	0.82	0.82	0.75	0.75
Hourly flow rate (vph)	0	346	120	0	21	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1131				
pX, platoon unblocked						
vC, conflicting volume	120				465	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120				465	120
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	99
cM capacity (veh/h)	1468				555	932

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	346	120	21	11
Volume Left	0	0	21	0
Volume Right	0	0	0	11
cSH	1700	1700	555	932
Volume to Capacity	0.20	0.07	0.04	0.01
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.0	11.7	8.9
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.8	
Approach LOS			B	

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Van Ness Ave & 41 SB Off-Ramp

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	118	2	3	357	0	0	0	0	170	13	410
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.84	0.84	0.84	0.92	0.92	0.92	0.71	0.71	0.71
Hourly flow rate (vph)	0	155	3	4	425	0	0	0	0	239	18	577
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		735										
pX, platoon unblocked												
vC, conflicting volume	425			158			385	589	157	589	590	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			158			385	589	157	589	590	212
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	39	96	27
cM capacity (veh/h)	1131			1419			143	418	861	391	418	793

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	158	145	283	450	385
Volume Left	0	4	0	239	0
Volume Right	3	0	0	192	385
cSH	1700	1419	1700	501	793
Volume to Capacity	0.09	0.00	0.17	0.90	0.49
Queue Length 95th (ft)	0	0	0	255	67
Control Delay (s)	0.0	0.2	0.0	47.9	13.8
Lane LOS		A		E	B
Approach Delay (s)	0.0	0.1		32.2	
Approach LOS				D	

Intersection Summary				
Average Delay	18.9			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Van Ness Ave & 41 SB Off-Ramp

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	197	17	11	343	0	0	0	0	58	10	182
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.86	0.86	0.86	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	249	22	13	399	0	0	0	0	72	12	225
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		735										
pX, platoon unblocked												
vC, conflicting volume	399			271			491	685	260	685	695	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	399			271			491	685	260	685	695	199
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	100	78	97	72
cM capacity (veh/h)	1156			1290			321	366	739	332	361	808

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	271	146	266	159	150
Volume Left	0	13	0	72	0
Volume Right	22	0	0	75	150
cSH	1700	1290	1700	464	808
Volume to Capacity	0.16	0.01	0.16	0.34	0.19
Queue Length 95th (ft)	0	1	0	38	17
Control Delay (s)	0.0	0.8	0.0	16.8	10.5
Lane LOS		A		C	B
Approach Delay (s)	0.0	0.3		13.7	
Approach LOS				B	

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
5: SR99 S Off-ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	294	0	317	0	0	0	0	587	56	44	308	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2						5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00						0.95		1.00	0.95	
Frt	1.00	0.85						0.99		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583						3493		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.28	1.00	
Satd. Flow (perm)	1770	1583						3493		531	3539	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.72	0.72	0.72	0.78	0.78	0.78
Adj. Flow (vph)	354	0	382	0	0	0	0	815	78	56	395	0
RTOR Reduction (vph)	0	278	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	354	104	0	0	0	0	0	877	0	56	395	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	12.2	12.2						23.0		23.0	23.0	
Effective Green, g (s)	12.2	12.2						23.0		23.0	23.0	
Actuated g/C Ratio	0.27	0.27						0.52		0.52	0.52	
Clearance Time (s)	4.2	4.2						5.2		5.2	5.2	
Vehicle Extension (s)	5.2	5.2						0.2		0.2	0.2	
Lane Grp Cap (vph)	484	433						1801		274	1825	
v/s Ratio Prot	c0.20	0.07						c0.25			0.11	
v/s Ratio Perm										0.11		
v/c Ratio	0.73	0.24						0.49		0.20	0.22	
Uniform Delay, d1	14.7	12.6						7.0		5.8	5.9	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	7.0	0.6						0.1		0.1	0.0	
Delay (s)	21.7	13.2						7.1		6.0	5.9	
Level of Service	C	B						A		A	A	
Approach Delay (s)		17.3			0.0			7.1			5.9	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	9.4
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	149	2	198	0	0	0	0	561	33	114	382	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2						5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00						0.95		1.00	0.95	
Frt	1.00	0.85						0.99		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1586						3510		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.41	1.00	
Satd. Flow (perm)	1770	1586						3510		757	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	159	2	211	0	0	0	0	610	36	121	406	0
RTOR Reduction (vph)	0	168	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	159	45	0	0	0	0	0	637	0	121	406	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	8.6	8.6						23.8		23.8	23.8	
Effective Green, g (s)	8.6	8.6						23.8		23.8	23.8	
Actuated g/C Ratio	0.21	0.21						0.57		0.57	0.57	
Clearance Time (s)	4.2	4.2						5.2		5.2	5.2	
Vehicle Extension (s)	5.2	5.2						0.2		0.2	0.2	
Lane Grp Cap (vph)	364	326						1999		431	2015	
v/s Ratio Prot	c0.09	0.03						c0.18			0.11	
v/s Ratio Perm										0.16		
v/c Ratio	0.44	0.14						0.32		0.28	0.20	
Uniform Delay, d1	14.5	13.6						4.7		4.6	4.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.4						0.0		0.1	0.0	
Delay (s)	16.4	14.0						4.8		4.7	4.4	
Level of Service	B	B						A		A	A	
Approach Delay (s)		15.0			0.0			4.8			4.5	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	9.4
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: SR99 N On-Ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	31	7	83	326	550	0	0	318	105
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.70	0.70	0.70	0.76	0.76	0.76	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	44	10	119	429	724	0	0	370	122
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								284			1117	
pX, platoon unblocked												
vC, conflicting volume	1774	2012	246	1766	2073	362	492			724		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1774	2012	246	1766	2073	362	492			724		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	69	81	60			100		
cM capacity (veh/h)	23	35	754	36	32	635	1068			875		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	49	124	429	362	362	247	245
Volume Left	44	0	429	0	0	0	0
Volume Right	0	119	0	0	0	0	122
cSH	36	359	1068	1700	1700	1700	1700
Volume to Capacity	1.37	0.34	0.40	0.21	0.21	0.15	0.14
Queue Length 95th (ft)	130	37	49	0	0	0	0
Control Delay (s)	450.8	20.2	10.6	0.0	0.0	0.0	0.0
Lane LOS	F	C	B				
Approach Delay (s)	142.9		4.0			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	16.1		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: SR99 N On-Ramp & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	23	2	69	275	431	0	0	474	408
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.59	0.59	0.59	0.94	0.94	0.94	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	39	3	117	293	459	0	0	533	458
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								284			1117	
pX, platoon unblocked												
vC, conflicting volume	1695	1805	496	1310	2035	229	991			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1695	1805	496	1310	2035	229	991			459		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	50	90	85	58			100		
cM capacity (veh/h)	32	45	520	78	33	773	693			1099		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	41	119	293	229	229	355	636
Volume Left	39	0	293	0	0	0	0
Volume Right	0	117	0	0	0	0	458
cSH	74	584	693	1700	1700	1700	1700
Volume to Capacity	0.55	0.20	0.42	0.13	0.13	0.21	0.37
Queue Length 95th (ft)	59	19	53	0	0	0	0
Control Delay (s)	101.9	12.7	13.9	0.0	0.0	0.0	0.0
Lane LOS	F	B	B				
Approach Delay (s)	35.5		5.4			0.0	
Approach LOS	E						

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	4	27	14	10	13	41	601	3	1	377	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.71	0.71	0.71	0.84	0.84	0.84
Hourly flow rate (vph)	26	5	33	15	11	14	58	846	4	1	449	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								595			806	
pX, platoon unblocked												
vC, conflicting volume	1024	1432	239	1227	1445	425	479			851		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1024	1432	239	1227	1445	425	479			851		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	96	96	87	91	98	95			100		
cM capacity (veh/h)	165	126	762	120	124	577	1080			783		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	64	40	481	427	226	254
Volume Left	26	15	58	0	1	0
Volume Right	33	14	0	4	0	30
cSH	268	168	1080	1700	783	1700
Volume to Capacity	0.24	0.24	0.05	0.25	0.00	0.15
Queue Length 95th (ft)	23	22	4	0	0	0
Control Delay (s)	22.6	33.0	1.6	0.0	0.1	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	22.6	33.0	0.8		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	33	2	80	9	9	18	56	435	5	2	796	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.75	0.75	0.75	0.89	0.89	0.89	0.88	0.88	0.88
Hourly flow rate (vph)	49	3	118	12	12	24	63	489	6	2	905	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								595			806	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1326	1546	469	1193	1561	247	939			494		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1162	1404	221	1016	1419	247	736			494		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	57	97	83	91	89	97	92			100		
cM capacity (veh/h)	114	116	713	134	113	753	788			1066		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	169	48	307	250	455	486
Volume Left	49	12	63	0	2	0
Volume Right	118	24	0	6	0	34
cSH	275	211	788	1700	1066	1700
Volume to Capacity	0.62	0.23	0.08	0.15	0.00	0.29
Queue Length 95th (ft)	94	21	6	0	0	0
Control Delay (s)	37.1	27.0	2.8	0.0	0.1	0.0
Lane LOS	E	D	A		A	
Approach Delay (s)	37.1	27.0	1.5		0.0	
Approach LOS	E	D				

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
9: Broadway St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	32	17	20	68	38	6	47	417	112	11	310	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.98		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3257		1770	1824		1770	3427		1770	3448	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3257		1770	1824		1770	3427		1770	3448	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.79	0.79	0.79	0.95	0.95	0.95
Adj. Flow (vph)	41	22	25	89	50	8	59	528	142	12	326	68
RTOR Reduction (vph)	0	22	0	0	5	0	0	16	0	0	12	0
Lane Group Flow (vph)	41	25	0	89	53	0	59	654	0	12	382	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.3	8.3		8.3	8.3		4.1	23.9		1.2	21.0	
Effective Green, g (s)	8.3	8.3		8.3	8.3		4.1	23.9		1.2	21.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.07	0.39		0.02	0.34	
Clearance Time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	240	442		240	248		119	1341		35	1185	
v/s Ratio Prot	c0.02	0.01		c0.05	0.03		c0.03	c0.19		0.01	0.11	
v/s Ratio Perm												
v/c Ratio	0.17	0.06		0.37	0.21		0.50	0.49		0.34	0.32	
Uniform Delay, d1	23.4	23.0		24.0	23.5		27.5	14.0		29.6	14.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.4	0.2		1.2	0.1		2.1	0.1	
Delay (s)	23.5	23.0		24.4	23.7		28.7	14.1		31.7	14.9	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		23.2			24.1			15.3			15.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	19.4
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
9: Broadway St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	62	89	55	76	18	16	42	332	147	52	674	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.93		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3336		1770	1730		1770	3376		1770	3511	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3336		1770	1730		1770	3376		1770	3511	
Peak-hour factor, PHF	0.62	0.62	0.62	0.84	0.84	0.84	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	100	144	89	90	21	19	46	365	162	55	717	40
RTOR Reduction (vph)	0	72	0	0	17	0	0	38	0	0	3	0
Lane Group Flow (vph)	100	161	0	90	23	0	46	489	0	55	754	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.2	13.2		8.8	8.8		4.2	21.6		4.3	21.7	
Effective Green, g (s)	13.2	13.2		8.8	8.8		4.2	21.6		4.3	21.7	
Actuated g/C Ratio	0.20	0.20		0.13	0.13		0.06	0.32		0.06	0.32	
Clearance Time (s)	5.6	5.6		5.6	5.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	347	654		231	226		110	1084		113	1132	
v/s Ratio Prot	c0.06	0.05		c0.05	0.01		0.03	0.14		c0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.29	0.25		0.39	0.10		0.42	0.45		0.49	0.67	
Uniform Delay, d1	23.0	22.9		26.8	25.8		30.4	18.1		30.4	19.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.4	0.1		0.9	0.1		1.2	1.2	
Delay (s)	23.2	22.9		27.2	25.8		31.3	18.3		31.6	20.8	
Level of Service	C	C		C	C		C	B		C	C	
Approach Delay (s)		23.0			26.8			19.3			21.6	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.2
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
10: Van Ness Ave & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	20	75	33	199	522	137	55	377	42	38	246	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1778		1770	1863	1583	1770	3486		1770	3411	
Flt Permitted	0.25	1.00		0.67	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	469	1778		1246	1863	1583	1770	3486		1770	3411	
Peak-hour factor, PHF	0.78	0.78	0.78	0.87	0.87	0.87	0.80	0.80	0.80	0.83	0.83	0.83
Adj. Flow (vph)	26	96	42	229	600	157	69	471	52	46	296	94
RTOR Reduction (vph)	0	15	0	0	0	30	0	8	0	0	31	0
Lane Group Flow (vph)	26	123	0	229	600	127	69	515	0	46	359	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	36.1	36.1		36.1	36.1	36.1	9.1	22.7		4.0	17.6	
Effective Green, g (s)	36.1	36.1		36.1	36.1	36.1	9.1	22.7		4.0	17.6	
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.12	0.30		0.05	0.23	
Clearance Time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Vehicle Extension (s)	4.8	4.8		4.8	4.8	4.8	2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	225	854		598	894	760	214	1052		94	798	
v/s Ratio Prot		0.07			c0.32		0.04	c0.15		0.03	c0.11	
v/s Ratio Perm	0.06			0.18		0.08						
v/c Ratio	0.12	0.14		0.38	0.67	0.17	0.32	0.49		0.49	0.45	
Uniform Delay, d1	10.8	10.9		12.5	15.0	11.1	30.2	21.5		34.6	24.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2		0.8	2.5	0.2	0.3	0.7		1.5	0.8	
Delay (s)	11.2	11.1		13.3	17.5	11.3	30.5	22.2		36.1	25.4	
Level of Service	B	B		B	B	B	C	C		D	C	
Approach Delay (s)		11.1			15.5			23.2			26.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	81	175	59	198	282	62	38	371	40	34	532	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1792		1770	1863	1583	1770	3488		1770	3465	
Flt Permitted	0.46	1.00		0.53	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	860	1792		987	1863	1583	1770	3488		1770	3465	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	92	199	67	228	324	71	41	399	43	42	657	107
RTOR Reduction (vph)	0	13	0	0	0	30	0	7	0	0	11	0
Lane Group Flow (vph)	92	253	0	228	324	41	41	435	0	42	753	0
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	25.7	25.7		25.7	25.7	25.7	3.6	24.5		3.6	24.5	
Effective Green, g (s)	25.7	25.7		25.7	25.7	25.7	3.6	24.5		3.6	24.5	
Actuated g/C Ratio	0.39	0.39		0.39	0.39	0.39	0.05	0.37		0.05	0.37	
Clearance Time (s)	4.2	4.2		4.2	4.2	4.2	4.0	4.2		4.0	4.2	
Vehicle Extension (s)	4.8	4.8		4.8	4.8	4.8	2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	334	696		383	723	615	96	1291		96	1282	
v/s Ratio Prot		0.14			0.17		0.02	c0.12		0.02	c0.22	
v/s Ratio Perm	0.11			c0.23		0.03						
v/c Ratio	0.28	0.36		0.60	0.45	0.07	0.43	0.34		0.44	0.59	
Uniform Delay, d1	13.9	14.4		16.1	15.0	12.7	30.3	15.0		30.3	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.6		3.6	0.9	0.1	1.1	0.3		1.2	1.0	
Delay (s)	14.7	15.0		19.7	15.9	12.8	31.4	15.3		31.5	17.8	
Level of Service	B	B		B	B	B	C	B		C	B	
Approach Delay (s)		15.0			16.9			16.7			18.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	8.4
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: M St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	38	183	19	0	0	0	0	390	20	24	412	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5042	1583					3513		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.45	1.00	
Satd. Flow (perm)		5042	1583					3513		842	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.81	0.81	0.81	0.84	0.84	0.84
Adj. Flow (vph)	42	203	21	0	0	0	0	481	25	29	490	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	245	8	0	0	0	0	501	0	29	490	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		20.0	20.0					25.0		25.0	25.0	
Effective Green, g (s)		20.0	20.0					25.0		25.0	25.0	
Actuated g/C Ratio		0.37	0.37					0.47		0.47	0.47	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		2.0	2.0					2.0		2.0	2.0	
Lane Grp Cap (vph)		1888	593					1645		394	1657	
v/s Ratio Prot		c0.05						c0.14			0.14	
v/s Ratio Perm			0.00							0.03		
v/c Ratio		0.13	0.01					0.30		0.07	0.30	
Uniform Delay, d1		11.0	10.5					8.8		7.8	8.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.0		0.0	0.0	
Delay (s)		11.0	10.5					8.8		7.9	8.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		11.0			0.0			8.8			8.7	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: M St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	62	486	11	0	0	0	0	553	17	67	718	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					1.00		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5057	1583					3523		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.39	1.00	
Satd. Flow (perm)		5057	1583					3523		727	3539	
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.94	0.94	0.94	0.81	0.81	0.81
Adj. Flow (vph)	77	600	14	0	0	0	0	588	18	83	886	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	677	5	0	0	0	0	603	0	83	886	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		20.0	20.0					25.0		25.0	25.0	
Effective Green, g (s)		20.0	20.0					25.0		25.0	25.0	
Actuated g/C Ratio		0.37	0.37					0.47		0.47	0.47	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		2.0	2.0					2.0		2.0	2.0	
Lane Grp Cap (vph)		1894	593					1649		340	1657	
v/s Ratio Prot		c0.13						0.17			c0.25	
v/s Ratio Perm			0.00							0.11		
v/c Ratio		0.36	0.01					0.37		0.24	0.53	
Uniform Delay, d1		12.1	10.5					9.1		8.5	10.1	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.1	0.2	
Delay (s)		12.1	10.5					9.2		8.7	10.2	
Level of Service		B	B					A		A	B	
Approach Delay (s)		12.1			0.0			9.2			10.1	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	12	16	79	313	6	85	343	3	8	345	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1767	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	1767	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.65	0.65	0.65	0.86	0.86	0.86	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	37	18	25	92	364	7	104	418	4	10	421	43
RTOR Reduction (vph)	0	0	23	0	0	3	0	0	3	0	0	32
Lane Group Flow (vph)	37	18	2	83	373	4	104	418	1	10	421	11
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	5		6	6		3	8		7	4	
Permitted Phases			5			6			8			4
Actuated Green, G (s)	7.4	7.4	7.4	35.7	35.7	35.7	10.0	31.7	31.7	1.1	22.8	22.8
Effective Green, g (s)	7.4	7.4	7.4	35.7	35.7	35.7	10.0	31.7	31.7	1.1	22.8	22.8
Actuated g/C Ratio	0.08	0.08	0.08	0.39	0.39	0.39	0.11	0.34	0.34	0.01	0.25	0.25
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)	4.9	4.9	4.9	4.9	4.9	4.9	2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	142	149	127	649	682	611	191	1213	542	21	872	390
v/s Ratio Prot	c0.02	0.01		0.05	c0.21		c0.06	0.12		0.01	c0.12	
v/s Ratio Perm			0.00			0.00			0.00			0.01
v/c Ratio	0.26	0.12	0.02	0.13	0.55	0.01	0.54	0.34	0.00	0.48	0.48	0.03
Uniform Delay, d1	40.0	39.5	39.2	18.3	22.1	17.5	39.1	22.7	20.0	45.4	29.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.7	0.1	0.2	1.5	0.0	1.7	0.3	0.0	6.1	0.9	0.1
Delay (s)	42.0	40.3	39.3	18.5	23.6	17.5	40.8	23.0	20.0	51.5	30.7	26.5
Level of Service	D	D	D	B	C	B	D	C	C	D	C	C
Approach Delay (s)		40.7			22.6			26.5			30.7	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.6
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	34	162	56	93	11	43	563	10	5	568	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1764	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	1764	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.70	0.70	0.70	0.86	0.86	0.86	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	121	49	231	65	108	13	47	612	11	6	638	25
RTOR Reduction (vph)	0	0	187	0	0	11	0	0	6	0	0	12
Lane Group Flow (vph)	121	49	44	58	115	2	47	612	5	6	638	13
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	5		6	6		3	8		7	4	
Permitted Phases			5			6			8			4
Actuated Green, G (s)	14.7	14.7	14.7	13.6	13.6	13.6	4.2	30.6	30.6	0.9	27.3	27.3
Effective Green, g (s)	14.7	14.7	14.7	13.6	13.6	13.6	4.2	30.6	30.6	0.9	27.3	27.3
Actuated g/C Ratio	0.19	0.19	0.19	0.18	0.18	0.18	0.05	0.40	0.40	0.01	0.36	0.36
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)	4.9	4.9	4.9	4.9	4.9	4.9	2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	341	358	305	299	314	282	97	1417	634	21	1265	566
v/s Ratio Prot	c0.07	0.03		0.03	c0.07		c0.03	c0.17		0.00	c0.18	
v/s Ratio Perm			0.03			0.00			0.00			0.01
v/c Ratio	0.35	0.14	0.15	0.19	0.37	0.01	0.48	0.43	0.01	0.29	0.50	0.02
Uniform Delay, d1	26.7	25.6	25.6	26.7	27.6	25.8	35.0	16.6	13.8	37.4	19.2	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.4	0.4	0.6	1.5	0.0	1.4	0.4	0.0	2.7	0.6	0.0
Delay (s)	28.0	25.9	26.1	27.4	29.1	25.9	36.4	17.0	13.8	40.2	19.9	15.9
Level of Service	C	C	C	C	C	C	D	B	B	D	B	B
Approach Delay (s)		26.6			28.3			18.3			19.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	20.8
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	35	89	112	40	342	0	0	373	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					4.2	4.2	4.2	4.2			4.2	
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.96	
Flt Protected					0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					3490	1583	1770	3539			3414	
Flt Permitted					0.99	1.00	0.44	1.00			1.00	
Satd. Flow (perm)					3490	1583	822	3539			3414	
Peak-hour factor, PHF	0.92	0.92	0.92	0.69	0.69	0.69	0.81	0.81	0.81	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	51	129	162	49	422	0	0	429	133
RTOR Reduction (vph)	0	0	0	0	0	126	0	0	0	0	36	0
Lane Group Flow (vph)	0	0	0	0	180	36	49	422	0	0	526	0
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					8.0	8.0	20.0	20.0			20.0	
Effective Green, g (s)					8.0	8.0	20.0	20.0			20.0	
Actuated g/C Ratio					0.22	0.22	0.55	0.55			0.55	
Clearance Time (s)					4.2	4.2	4.2	4.2			4.2	
Vehicle Extension (s)					2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)					767	348	452	1945			1876	
v/s Ratio Prot					c0.05			0.12			c0.15	
v/s Ratio Perm						0.02	0.06					
v/c Ratio					0.23	0.10	0.11	0.22			0.28	
Uniform Delay, d1					11.7	11.3	3.9	4.2			4.4	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					0.1	0.0	0.0	0.0			0.0	
Delay (s)					11.7	11.4	4.0	4.2			4.4	
Level of Service					B	B	A	A			A	
Approach Delay (s)		0.0			11.6			4.2			4.4	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	36.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	31	50	119	74	585	0	0	564	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					4.2	4.2	4.2	4.2			4.2	
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.98	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					3473	1583	1770	3539			3473	
Flt Permitted					0.98	1.00	0.37	1.00			1.00	
Satd. Flow (perm)					3473	1583	690	3539			3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	38	61	145	81	643	0	0	648	92
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	99	25	81	643	0	0	728	0
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					6.0	6.0	20.5	20.5			20.5	
Effective Green, g (s)					6.0	6.0	20.5	20.5			20.5	
Actuated g/C Ratio					0.17	0.17	0.59	0.59			0.59	
Clearance Time (s)					4.2	4.2	4.2	4.2			4.2	
Vehicle Extension (s)					2.0	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)					597	272	405	2079			2040	
v/s Ratio Prot					c0.03			0.18			c0.21	
v/s Ratio Perm						0.02	0.12					
v/c Ratio					0.17	0.09	0.20	0.31			0.36	
Uniform Delay, d1					12.3	12.2	3.4	3.6			3.8	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					0.0	0.1	0.1	0.0			0.0	
Delay (s)					12.4	12.2	3.5	3.7			3.8	
Level of Service					B	B	A	A			A	
Approach Delay (s)		0.0			12.3			3.6			3.8	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	34.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
14: Ventura Ave & S 1st St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	297	4	12	398	153	6	142	5	130	103	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	3520		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.67	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1255	3520		1171	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.75	0.75	0.75	0.79	0.79	0.79
Adj. Flow (vph)	73	323	4	15	491	189	8	189	7	165	130	81
RTOR Reduction (vph)	0	0	0	0	0	90	0	3	0	0	0	63
Lane Group Flow (vph)	73	327	0	15	491	99	8	193	0	165	130	18
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.4	30.8		1.0	27.4	27.4	12.9	12.9		12.9	12.9	12.9
Effective Green, g (s)	4.4	30.8		1.0	27.4	27.4	12.9	12.9		12.9	12.9	12.9
Actuated g/C Ratio	0.08	0.53		0.02	0.47	0.47	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	135	1879		31	1675	749	280	784		261	415	353
v/s Ratio Prot	c0.04	c0.09		0.01	c0.14			0.05			0.07	
v/s Ratio Perm						0.06	0.01			c0.14		0.01
v/c Ratio	0.54	0.17		0.48	0.29	0.13	0.03	0.25		0.63	0.31	0.05
Uniform Delay, d1	25.8	7.0		28.2	9.3	8.6	17.6	18.5		20.4	18.8	17.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.0		4.3	0.0	0.0	0.0	0.1		3.6	0.2	0.0
Delay (s)	28.1	7.0		32.5	9.4	8.6	17.6	18.6		24.0	19.0	17.7
Level of Service	C	A		C	A	A	B	B		C	B	B
Approach Delay (s)		10.9			9.7			18.5			20.9	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	17.8
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
14: Ventura Ave & S 1st St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	519	7	21	396	255	10	217	16	188	165	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	3502		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.61	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1127	3502		1105	1863	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.77	0.77	0.77	0.91	0.91	0.91	0.89	0.89	0.89
Adj. Flow (vph)	127	552	7	27	514	331	11	238	18	211	185	115
RTOR Reduction (vph)	0	1	0	0	0	167	0	6	0	0	0	84
Lane Group Flow (vph)	127	559	0	27	514	164	11	250	0	211	185	31
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	7.8	33.4		2.3	27.9	27.9	17.9	17.9		17.9	17.9	17.9
Effective Green, g (s)	7.8	33.4		2.3	27.9	27.9	17.9	17.9		17.9	17.9	17.9
Actuated g/C Ratio	0.12	0.50		0.03	0.42	0.42	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	4.6		4.0	4.6	4.6	4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	207	1767		61	1478	661	302	938		296	499	424
v/s Ratio Prot	c0.07	0.16		0.02	c0.15			0.07			0.10	
v/s Ratio Perm						0.10	0.01			c0.19		0.02
v/c Ratio	0.61	0.32		0.44	0.35	0.25	0.04	0.27		0.71	0.37	0.07
Uniform Delay, d1	28.1	9.9		31.6	13.3	12.6	18.1	19.3		22.1	19.9	18.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.0		1.9	0.1	0.1	0.0	0.1		6.6	0.2	0.0
Delay (s)	31.8	10.0		33.5	13.3	12.7	18.1	19.3		28.7	20.0	18.3
Level of Service	C	A		C	B	B	B	B		C	C	B
Approach Delay (s)		14.0			13.7			19.3			23.2	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	108	0	7	162	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.89	0.89	0.56	0.56
Hourly flow rate (vph)	120	0	8	182	9	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	484			1038		
pX, platoon unblocked						
vC, conflicting volume			120		318	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			120		318	120
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1468		672	931

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	120	190	16
Volume Left	0	8	9
Volume Right	0	0	7
cSH	1700	1468	767
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.4	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.8
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	148	0	4	164	4	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.89	0.89	0.40	0.40
Hourly flow rate (vph)	164	0	4	184	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	484			1038		
pX, platoon unblocked						
vC, conflicting volume			164		358	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			164		358	164
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	99
cM capacity (veh/h)			1414		639	880

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	164	189	20
Volume Left	0	4	10
Volume Right	0	0	10
cSH	1700	1414	740
Volume to Capacity	0.10	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.2	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	10.0
Approach LOS			A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
16: H St & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	102	102	0	0	174	14	0	27	0	5	63	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	1.00
Satd. Flow (prot)	1770	1863			1863	1583		2049			2038	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)	1770	1863			1863	1583		2049			2049	1583
Peak-hour factor, PHF	0.80	0.80	0.92	0.92	0.80	0.80	0.92	0.92	0.92	0.59	0.92	0.59
Adj. Flow (vph)	128	128	0	0	218	18	0	29	0	8	68	315
RTOR Reduction (vph)	0	0	0	0	0	14	0	0	0	0	0	209
Lane Group Flow (vph)	128	128	0	0	218	4	0	29	0	0	76	106
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4!		4!	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	6.8	20.5			9.7	9.7		14.6			14.8	14.6
Effective Green, g (s)	6.8	20.5			9.7	9.7		14.6			14.8	14.6
Actuated g/C Ratio	0.16	0.47			0.22	0.22		0.34			0.34	0.34
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	277	878			415	353		688			697	531
v/s Ratio Prot	c0.07	0.07			c0.12			0.01			0.04	
v/s Ratio Perm						0.00					0.00	c0.07
v/c Ratio	0.46	0.15			0.53	0.01		0.04			0.11	0.20
Uniform Delay, d1	16.7	6.5			14.9	13.2		9.7			9.8	10.3
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.2	0.1			2.1	0.0		0.0			0.1	0.1
Delay (s)	17.9	6.7			17.0	13.2		9.7			9.9	10.4
Level of Service	B	A			B	B		A			A	B
Approach Delay (s)		12.3			16.7			9.7			10.3	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	12.4
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	105	164	0	0	75	5	0	63	0	10	27	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.98	1.00
Satd. Flow (prot)	1770	1863			1863	1583		2049			2011	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)	1770	1863			1863	1583		2049			2049	1583
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.83	0.83	0.92	0.92	0.92	0.57	0.92	0.57
Adj. Flow (vph)	119	186	0	0	90	6	0	68	0	18	29	230
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	0	164
Lane Group Flow (vph)	119	186	0	0	90	1	0	68	0	0	47	66
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4!		4!	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	7.0	15.8			4.8	4.8		9.8			10.0	9.8
Effective Green, g (s)	7.0	15.8			4.8	4.8		9.8			10.0	9.8
Actuated g/C Ratio	0.21	0.46			0.14	0.14		0.29			0.29	0.29
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	364	866			263	223		591			603	456
v/s Ratio Prot	c0.07	0.10			c0.05			0.03			0.02	
v/s Ratio Perm						0.00					0.00	c0.04
v/c Ratio	0.33	0.21			0.34	0.00		0.12			0.08	0.15
Uniform Delay, d1	11.5	5.4			13.2	12.5		8.9			8.7	9.0
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.5	0.2			1.5	0.0		0.0			0.1	0.1
Delay (s)	12.0	5.7			14.7	12.6		8.9			8.7	9.0
Level of Service	B	A			B	B		A			A	A
Approach Delay (s)		8.1			14.6			8.9			9.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	34.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: Van Ness Ave & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	102	43	95	455	54	34	53	33	6	28	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1833		1770	1756		1770	1762	
Flt Permitted	0.33	1.00	1.00	0.67	1.00		0.72	1.00		0.68	1.00	
Satd. Flow (perm)	623	1863	1583	1253	1833		1332	1756		1269	1762	
Peak-hour factor, PHF	0.77	0.77	0.77	0.89	0.89	0.89	0.73	0.73	0.73	0.69	0.69	0.69
Adj. Flow (vph)	6	132	56	107	511	61	47	73	45	9	41	23
RTOR Reduction (vph)	0	0	26	0	6	0	0	31	0	0	16	0
Lane Group Flow (vph)	6	132	30	107	566	0	47	87	0	9	48	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	28.1	28.1	28.1	28.1	28.1		16.0	16.0		16.0	16.0	
Effective Green, g (s)	28.1	28.1	28.1	28.1	28.1		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54		0.30	0.30		0.30	0.30	
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	333	997	847	671	981		406	535		387	537	
v/s Ratio Prot		0.07			c0.31			c0.05			0.03	
v/s Ratio Perm	0.01		0.02	0.09			0.04			0.01		
v/c Ratio	0.02	0.13	0.04	0.16	0.58		0.12	0.16		0.02	0.09	
Uniform Delay, d1	5.7	6.1	5.8	6.2	8.2		13.2	13.3		12.8	13.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.0	0.0	0.0	0.5		0.0	0.1		0.0	0.0	
Delay (s)	5.7	6.1	5.8	6.2	8.7		13.2	13.4		12.8	13.1	
Level of Service	A	A	A	A	A		B	B		B	B	
Approach Delay (s)		6.0			8.3			13.3			13.0	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: Van Ness Ave & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	9	197	51	68	300	22	77	39	96	20	60	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1843		1770	1664		1770	1756	
Flt Permitted	0.48	1.00	1.00	0.62	1.00		0.67	1.00		0.66	1.00	
Satd. Flow (perm)	895	1863	1583	1161	1843		1252	1664		1221	1756	
Peak-hour factor, PHF	0.91	0.91	0.91	0.86	0.86	0.86	0.84	0.84	0.84	0.73	0.73	0.73
Adj. Flow (vph)	10	216	56	79	349	26	92	46	114	27	82	51
RTOR Reduction (vph)	0	0	31	0	5	0	0	73	0	0	32	0
Lane Group Flow (vph)	10	216	25	79	370	0	92	87	0	27	101	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	17.4	17.4	17.4	17.4	17.4		14.7	14.7		14.7	14.7	
Effective Green, g (s)	17.4	17.4	17.4	17.4	17.4		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.43		0.36	0.36		0.36	0.36	
Clearance Time (s)	4.2	4.2	4.2	4.2	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	385	800	680	499	792		454	604		443	637	
v/s Ratio Prot		0.12			c0.20			0.05			0.06	
v/s Ratio Perm	0.01		0.02	0.07			c0.07			0.02		
v/c Ratio	0.03	0.27	0.04	0.16	0.47		0.20	0.14		0.06	0.16	
Uniform Delay, d1	6.7	7.5	6.7	7.1	8.2		8.9	8.7		8.4	8.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1	0.0	0.1	0.2		0.1	0.0		0.0	0.0	
Delay (s)	6.7	7.5	6.7	7.1	8.4		9.0	8.7		8.4	8.8	
Level of Service	A	A	A	A	A		A	A		A	A	
Approach Delay (s)		7.3			8.2			8.8			8.7	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	157	46	0	0	0	0	50	18	6	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5						4.5		4.5	4.5	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frt		0.97						0.96		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		4901						1797		1770	1863	
Flt Permitted		0.99						1.00		0.70	1.00	
Satd. Flow (perm)		4901						1797		1295	1863	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.71	0.71	0.71	0.90	0.90	0.90
Adj. Flow (vph)	47	204	60	0	0	0	0	70	25	7	41	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	271	0	0	0	0	0	79	0	7	41	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		9.7						9.7		9.7	9.7	
Effective Green, g (s)		9.7						9.7		9.7	9.7	
Actuated g/C Ratio		0.34						0.34		0.34	0.34	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		0.2						0.2		0.2	0.2	
Lane Grp Cap (vph)		1674						614		442	636	
v/s Ratio Prot		c0.06						c0.04			0.02	
v/s Ratio Perm										0.01		
v/c Ratio		0.16						0.13		0.02	0.06	
Uniform Delay, d1		6.5						6.4		6.2	6.3	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.0						0.0		0.0	0.0	
Delay (s)		6.5						6.5		6.2	6.3	
Level of Service		A						A		A	A	
Approach Delay (s)		6.5			0.0			6.5			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	28.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	18	390	23	0	0	0	0	53	92	38	59	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5						4.5		4.5	4.5	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frt		0.99						0.91		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		5035						1704		1770	1863	
Flt Permitted		1.00						1.00		0.63	1.00	
Satd. Flow (perm)		5035						1704		1182	1863	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.74	0.74	0.74	0.71	0.71	0.71
Adj. Flow (vph)	21	464	27	0	0	0	0	72	124	54	83	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	76	0	0	0	0
Lane Group Flow (vph)	0	500	0	0	0	0	0	120	0	54	83	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		15.4						15.4		15.4	15.4	
Effective Green, g (s)		15.4						15.4		15.4	15.4	
Actuated g/C Ratio		0.39						0.39		0.39	0.39	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		0.2						0.2		0.2	0.2	
Lane Grp Cap (vph)		1948						659		457	721	
v/s Ratio Prot		c0.10						c0.07			0.04	
v/s Ratio Perm										0.05		
v/c Ratio		0.26						0.18		0.12	0.12	
Uniform Delay, d1		8.3						8.0		7.8	7.8	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.0						0.0		0.0	0.0	
Delay (s)		8.3						8.1		7.9	7.9	
Level of Service		A						A		A	A	
Approach Delay (s)		8.3			0.0			8.1			7.9	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
19: P St & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	26	210	7	14	8	0	0	8	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.79	0.79	0.79	0.42	0.42	0.42
Hourly flow rate (vph)	0	0	0	32	256	9	18	10	0	0	19	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	265			0			218	328	0	329	324	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			0			218	328	0	329	324	132
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	98	100	100	97	98
cM capacity (veh/h)	1296			1622			678	578	1084	584	581	893

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	160	137	18	10	36
Volume Left	32	0	18	0	0
Volume Right	0	9	0	0	17
cSH	1622	1700	678	578	694
Volume to Capacity	0.02	0.08	0.03	0.02	0.05
Queue Length 95th (ft)	1	0	2	1	4
Control Delay (s)	1.6	0.0	10.4	11.3	10.5
Lane LOS	A		B	B	B
Approach Delay (s)	0.8		10.8		10.5
Approach LOS			B		B

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
19: P St & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	27	203	17	63	19	0	0	5	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.76	0.76	0.76	0.45	0.45	0.45
Hourly flow rate (vph)	0	0	0	35	260	22	83	25	0	0	11	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	282			0			214	351	0	353	340	141
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	282			0			214	351	0	353	340	141
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			88	96	100	100	98	99
cM capacity (veh/h)	1277			1622			695	560	1084	549	568	881

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	165	152	83	25	20
Volume Left	35	0	83	0	0
Volume Right	0	22	0	0	9
cSH	1622	1700	695	560	674
Volume to Capacity	0.02	0.09	0.12	0.04	0.03
Queue Length 95th (ft)	2	0	10	3	2
Control Delay (s)	1.7	0.0	10.9	11.7	10.5
Lane LOS	A		B	B	B
Approach Delay (s)	0.9		11.1		10.5
Approach LOS			B		B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	81	8	54	103	2	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.87	
Flt Protected	1.00			0.98	1.00	
Satd. Flow (prot)	3493			3480	1622	
Flt Permitted	1.00			0.95	1.00	
Satd. Flow (perm)	3493			3380	1622	
Peak-hour factor, PHF	0.78	0.78	0.84	0.84	0.88	0.88
Adj. Flow (vph)	104	10	64	123	2	31
RTOR Reduction (vph)	9	0	0	0	29	0
Lane Group Flow (vph)	106	0	0	187	4	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	1.8			1.8	0.6	
Effective Green, g (s)	1.8			1.8	0.6	
Actuated g/C Ratio	0.15			0.15	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	524			507	81	
v/s Ratio Prot	0.03					
v/s Ratio Perm				c0.06	c0.00	
v/c Ratio	0.20			0.37	0.04	
Uniform Delay, d1	4.5			4.6	5.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.2	0.1	
Delay (s)	4.5			4.8	5.5	
Level of Service	A			A	A	
Approach Delay (s)	4.5			4.8	5.5	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	12.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	85	15	53	117	23	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			0.98	0.99	
Satd. Flow (prot)	3461			3485	1662	
Flt Permitted	1.00			0.95	0.99	
Satd. Flow (perm)	3461			3380	1662	
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.72	0.72
Adj. Flow (vph)	98	17	62	138	32	75
RTOR Reduction (vph)	13	0	0	0	72	0
Lane Group Flow (vph)	102	0	0	200	35	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	2.9			2.9	0.6	
Effective Green, g (s)	2.9			2.9	0.6	
Actuated g/C Ratio	0.22			0.22	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	766			748	76	
v/s Ratio Prot	0.03					
v/s Ratio Perm				c0.06	c0.02	
v/c Ratio	0.13			0.27	0.47	
Uniform Delay, d1	4.1			4.2	6.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.1	1.6	
Delay (s)	4.1			4.3	7.7	
Level of Service	A			A	A	
Approach Delay (s)	4.1			4.3	7.7	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	13.1	Sum of lost time (s)	9.6
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
21: H St & Kern St

4/9/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	171	67	158	162	11	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.86	0.86	0.70	0.70
Hourly flow rate (vph)	216	85	184	188	16	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	537			471		
pX, platoon unblocked						
vC, conflicting volume			301		815	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			301		815	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		95	97
cM capacity (veh/h)			1260		297	780

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	301	372	40
Volume Left	0	184	16
Volume Right	85	0	24
cSH	1700	1260	475
Volume to Capacity	0.18	0.15	0.08
Queue Length 95th (ft)	0	13	7
Control Delay (s)	0.0	4.8	13.3
Lane LOS		A	B
Approach Delay (s)	0.0	4.8	13.3
Approach LOS			B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	177	16	22	166	38	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.75	0.75	0.74	0.74
Hourly flow rate (vph)	201	18	29	221	51	73
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	537			471		
pX, platoon unblocked						
vC, conflicting volume			219		490	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			219		490	210
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	91
cM capacity (veh/h)			1350		526	830

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	219	251	124
Volume Left	0	29	51
Volume Right	18	0	73
cSH	1700	1350	670
Volume to Capacity	0.13	0.02	0.19
Queue Length 95th (ft)	0	2	17
Control Delay (s)	0.0	1.1	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	11.6
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
22: E St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	19	44	5	3	38	6	9	76	4	3	61	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1820			1826		1770	1848		1770	1790	
Flt Permitted		0.92			0.99		0.69	1.00		0.70	1.00	
Satd. Flow (perm)		1706			1806		1290	1848		1295	1790	
Peak-hour factor, PHF	0.93	0.93	0.93	0.73	0.73	0.73	0.84	0.84	0.84	0.82	0.82	0.82
Adj. Flow (vph)	20	47	5	4	52	8	11	90	5	4	74	26
RTOR Reduction (vph)	0	4	0	0	6	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	68	0	0	58	0	11	93	0	4	89	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		11.7			11.7		21.4	21.4		21.4	21.4	
Effective Green, g (s)		11.7			11.7		21.4	21.4		21.4	21.4	
Actuated g/C Ratio		0.28			0.28		0.52	0.52		0.52	0.52	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		481			509		665	953		668	923	
v/s Ratio Prot								c0.05			0.05	
v/s Ratio Perm		c0.04			0.03		0.01			0.00		
v/c Ratio		0.14			0.11		0.02	0.10		0.01	0.10	
Uniform Delay, d1		11.1			11.1		4.9	5.1		4.9	5.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.0	0.0		0.0	0.0	
Delay (s)		11.2			11.1		4.9	5.1		4.9	5.1	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		11.2			11.1			5.1			5.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.11		
Actuated Cycle Length (s)	41.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	21	74	19	8	63	10	14	71	14	25	140	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.98		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1805			1822		1770	1817		1770	1817	
Flt Permitted		0.94			0.97		0.63	1.00		0.69	1.00	
Satd. Flow (perm)		1713			1775		1175	1817		1285	1817	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83
Adj. Flow (vph)	23	80	20	10	75	12	17	87	17	30	169	33
RTOR Reduction (vph)	0	11	0	0	8	0	0	6	0	0	6	0
Lane Group Flow (vph)	0	112	0	0	89	0	17	98	0	30	196	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		11.7			11.7		21.3	21.3		21.3	21.3	
Effective Green, g (s)		11.7			11.7		21.3	21.3		21.3	21.3	
Actuated g/C Ratio		0.28			0.28		0.51	0.51		0.51	0.51	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		484			502		605	935		661	935	
v/s Ratio Prot								0.05			c0.11	
v/s Ratio Perm		c0.07			0.05		0.01			0.02		
v/c Ratio		0.23			0.18		0.03	0.10		0.05	0.21	
Uniform Delay, d1		11.4			11.2		5.0	5.2		5.0	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.0	0.0		0.0	0.0	
Delay (s)		11.5			11.3		5.0	5.2		5.0	5.5	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		11.5			11.3			5.1			5.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	41.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: F st & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	29	9	8	13	46	16	65	20	28	71	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	0.96		1.00	0.95	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792			1680		1770	1797		1770	1763	
Flt Permitted		0.87			0.97		0.67	1.00		0.69	1.00	
Satd. Flow (perm)		1594			1632		1250	1797		1292	1763	
Peak-hour factor, PHF	0.59	0.59	0.59	0.75	0.75	0.75	0.87	0.87	0.87	0.83	0.83	0.83
Adj. Flow (vph)	41	49	15	11	17	61	18	75	23	34	86	48
RTOR Reduction (vph)	0	10	0	0	44	0	0	11	0	0	23	0
Lane Group Flow (vph)	0	95	0	0	45	0	18	87	0	34	111	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		12.4			12.4		22.7	22.7		22.7	22.7	
Effective Green, g (s)		12.4			12.4		22.7	22.7		22.7	22.7	
Actuated g/C Ratio		0.29			0.29		0.52	0.52		0.52	0.52	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		454			465		652	938		674	920	
v/s Ratio Prot								0.05			c0.06	
v/s Ratio Perm		c0.06			0.03		0.01			0.03		
v/c Ratio		0.21			0.10		0.03	0.09		0.05	0.12	
Uniform Delay, d1		11.8			11.4		5.0	5.2		5.1	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		0.0	0.0		0.0	0.0	
Delay (s)		11.9			11.5		5.1	5.2		5.1	5.3	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		11.9			11.5			5.2			5.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	29	46	22	22	41	35	12	43	33	49	127	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.95		1.00	0.94		1.00	0.95	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1754		1770	1742		1770	1764	
Flt Permitted		0.90			0.92		0.62	1.00		0.70	1.00	
Satd. Flow (perm)		1618			1640		1147	1742		1301	1764	
Peak-hour factor, PHF	0.79	0.79	0.79	0.91	0.91	0.91	0.85	0.85	0.85	0.86	0.86	0.86
Adj. Flow (vph)	37	58	28	24	45	38	14	51	39	57	148	81
RTOR Reduction (vph)	0	19	0	0	27	0	0	19	0	0	35	0
Lane Group Flow (vph)	0	104	0	0	80	0	14	71	0	57	194	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		12.4			12.4		22.7	22.7		22.7	22.7	
Effective Green, g (s)		12.4			12.4		22.7	22.7		22.7	22.7	
Actuated g/C Ratio		0.29			0.29		0.52	0.52		0.52	0.52	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		461			467		599	909		679	921	
v/s Ratio Prot								0.04			c0.11	
v/s Ratio Perm		c0.06			0.05		0.01			0.04		
v/c Ratio		0.23			0.17		0.02	0.08		0.08	0.21	
Uniform Delay, d1		11.9			11.7		5.0	5.2		5.2	5.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.0	0.0		0.0	0.0	
Delay (s)		12.0			11.8		5.0	5.2		5.2	5.6	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		12.0			11.8			5.2			5.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	200	273	17	15	168	67	31	98	12	139	110	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1783		1770	3480		1770	3324	
Flt Permitted	0.56	1.00	1.00	0.45	1.00		0.61	1.00		0.67	1.00	
Satd. Flow (perm)	1038	1863	1583	834	1783		1144	3480		1241	3324	
Peak-hour factor, PHF	0.74	0.74	0.74	0.87	0.87	0.87	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	270	369	23	17	193	77	38	120	15	165	131	89
RTOR Reduction (vph)	0	0	13	0	23	0	0	9	0	0	51	0
Lane Group Flow (vph)	270	369	10	17	247	0	38	126	0	165	169	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	24.1	24.1	24.1	24.1	24.1		25.0	25.0		25.0	25.0	
Effective Green, g (s)	24.1	24.1	24.1	24.1	24.1		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.43	0.43		0.43	0.43	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	433	777	660	348	743		495	1505		537	1438	
v/s Ratio Prot		0.20			0.14			0.04			0.05	
v/s Ratio Perm	c0.26		0.01	0.02			0.03			c0.13		
v/c Ratio	0.62	0.47	0.01	0.05	0.33		0.08	0.08		0.31	0.12	
Uniform Delay, d1	13.3	12.2	9.9	10.0	11.4		9.6	9.7		10.7	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.2	0.0	0.0	0.1		0.0	0.0		0.1	0.0	
Delay (s)	15.3	12.4	9.9	10.0	11.5		9.7	9.7		10.9	9.8	
Level of Service	B	B	A	B	B		A	A		B	A	
Approach Delay (s)		13.5			11.4			9.7			10.3	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	8.7
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
25: H St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	194	41	22	228	143	16	90	11	80	191	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1755		1770	3481		1770	3354	
Flt Permitted	0.32	1.00	1.00	0.61	1.00		0.55	1.00		0.68	1.00	
Satd. Flow (perm)	593	1863	1583	1133	1755		1029	3481		1262	3354	
Peak-hour factor, PHF	0.86	0.86	0.86	0.76	0.76	0.76	0.86	0.86	0.86	0.89	0.89	0.89
Adj. Flow (vph)	115	226	48	29	300	188	19	105	13	90	215	115
RTOR Reduction (vph)	0	0	28	0	37	0	0	7	0	0	65	0
Lane Group Flow (vph)	115	226	20	29	451	0	19	111	0	90	265	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	23.3	23.3	23.3	23.3	23.3		25.0	25.0		25.0	25.0	
Effective Green, g (s)	23.3	23.3	23.3	23.3	23.3		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41		0.44	0.44		0.44	0.44	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	242	762	647	463	717		451	1527		554	1471	
v/s Ratio Prot		0.12			c0.26			0.03			c0.08	
v/s Ratio Perm	0.19		0.01	0.03			0.02			0.07		
v/c Ratio	0.48	0.30	0.03	0.06	0.63		0.04	0.07		0.16	0.18	
Uniform Delay, d1	12.4	11.3	10.1	10.2	13.4		9.2	9.3		9.7	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1	0.0	0.0	1.3		0.0	0.0		0.1	0.0	
Delay (s)	12.9	11.4	10.1	10.2	14.7		9.2	9.3		9.7	9.8	
Level of Service	B	B	B	B	B		A	A		A	A	
Approach Delay (s)		11.7			14.4			9.3			9.8	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	108	107	49	385	59	95	234	21	67	209	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1724		1770	3469		1770	3496		1770	3312	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1724		1770	3469		1770	3496		1770	3312	
Peak-hour factor, PHF	0.96	0.96	0.96	0.89	0.89	0.89	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	89	112	111	55	433	66	128	316	28	91	282	211
RTOR Reduction (vph)	0	39	0	0	14	0	0	7	0	0	156	0
Lane Group Flow (vph)	89	184	0	55	485	0	128	337	0	91	337	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.2	21.9		4.0	19.7		7.1	16.4		6.3	15.6	
Effective Green, g (s)	6.2	21.9		4.0	19.7		7.1	16.4		6.3	15.6	
Actuated g/C Ratio	0.10	0.34		0.06	0.30		0.11	0.25		0.10	0.24	
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	169	581		109	1051		193	882		172	795	
v/s Ratio Prot	c0.05	0.11		0.03	c0.14		c0.07	0.10		0.05	c0.10	
v/s Ratio Perm												
v/c Ratio	0.53	0.32		0.50	0.46		0.66	0.38		0.53	0.42	
Uniform Delay, d1	28.0	16.0		29.5	18.4		27.8	20.1		27.9	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.7		1.3	0.7		6.5	0.6		1.4	0.8	
Delay (s)	29.4	16.7		30.9	19.0		34.3	20.7		29.3	21.7	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		20.3			20.2			24.4			22.9	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	82	178	72	58	365	55	102	232	21	51	227	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1782		1770	3470		1770	3496		1770	3320	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1782		1770	3470		1770	3496		1770	3320	
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Adj. Flow (vph)	87	189	77	67	420	63	119	270	24	65	291	204
RTOR Reduction (vph)	0	16	0	0	14	0	0	7	0	0	143	0
Lane Group Flow (vph)	87	250	0	67	469	0	119	287	0	65	352	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.2	21.0		4.3	19.1		6.9	19.2		4.2	16.5	
Effective Green, g (s)	6.2	21.0		4.3	19.1		6.9	19.2		4.2	16.5	
Actuated g/C Ratio	0.10	0.32		0.07	0.29		0.11	0.29		0.06	0.25	
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	169	575		117	1018		188	1031		114	841	
v/s Ratio Prot	c0.05	c0.14		0.04	0.14		c0.07	c0.08		0.04	c0.11	
v/s Ratio Perm												
v/c Ratio	0.51	0.43		0.57	0.46		0.63	0.28		0.57	0.42	
Uniform Delay, d1	28.0	17.4		29.5	18.8		27.9	17.6		29.6	20.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.1		4.2	0.7		5.0	0.3		4.2	0.7	
Delay (s)	29.1	18.5		33.7	19.5		32.9	17.9		33.8	21.0	
Level of Service	C	B		C	B		C	B		C	C	
Approach Delay (s)		21.1			21.2			22.3			22.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	16.4
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	129	183	180	0	0	0	0	303	58	77	627	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		4982	1583					3454		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.51	1.00	
Satd. Flow (perm)		4982	1583					3454		944	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91
Adj. Flow (vph)	152	215	212	0	0	0	0	352	67	85	689	0
RTOR Reduction (vph)	0	0	108	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	367	104	0	0	0	0	390	0	85	689	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.0	19.0					26.0		26.0	26.0	
Effective Green, g (s)		19.0	19.0					26.0		26.0	26.0	
Actuated g/C Ratio		0.35	0.35					0.48		0.48	0.48	
Clearance Time (s)		4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1753	557					1663		455	1704	
v/s Ratio Prot		c0.07						0.11			c0.19	
v/s Ratio Perm			0.07							0.09		
v/c Ratio		0.21	0.19					0.23		0.19	0.40	
Uniform Delay, d1		12.2	12.1					8.2		8.0	9.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.1					0.0		0.1	0.1	
Delay (s)		12.3	12.2					8.2		8.0	9.1	
Level of Service		B	B					A		A	A	
Approach Delay (s)		12.2			0.0			8.2			9.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
27: M St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	154	265	104	0	0	0	0	494	41	66	424	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		4994	1583					3498		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.39	1.00	
Satd. Flow (perm)		4994	1583					3498		724	3539	
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.86	0.86	0.86	0.95	0.95	0.95
Adj. Flow (vph)	261	449	176	0	0	0	0	574	48	69	446	0
RTOR Reduction (vph)	0	0	114	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	710	62	0	0	0	0	611	0	69	446	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.0	19.0					26.0		26.0	26.0	
Effective Green, g (s)		19.0	19.0					26.0		26.0	26.0	
Actuated g/C Ratio		0.35	0.35					0.48		0.48	0.48	
Clearance Time (s)		4.5	4.5					4.5		4.5	4.5	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1757	557					1684		349	1704	
v/s Ratio Prot		c0.14						c0.17			0.13	
v/s Ratio Perm			0.04							0.10		
v/c Ratio		0.40	0.11					0.36		0.20	0.26	
Uniform Delay, d1		13.2	11.8					8.8		8.0	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0					0.0		0.1	0.0	
Delay (s)		13.3	11.8					8.8		8.1	8.3	
Level of Service		B	B					A		A	A	
Approach Delay (s)		13.0			0.0			8.8			8.3	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	148	43	41	236	0	0	1032	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.19	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	358	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	44	180	52	49	284	0	0	1290	129
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	55
Lane Group Flow (vph)	0	0	0	44	180	10	49	284	0	0	1290	74
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				7.1	7.1	7.1	20.8	20.8			20.8	20.8
Effective Green, g (s)				7.1	7.1	7.1	20.8	20.8			20.8	20.8
Actuated g/C Ratio				0.20	0.20	0.20	0.57	0.57			0.57	0.57
Clearance Time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Vehicle Extension (s)				3.0	3.0	3.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				346	364	310	205	2028			2028	907
v/s Ratio Prot				0.02	c0.10			0.08			c0.36	
v/s Ratio Perm						0.01	0.14					0.05
v/c Ratio				0.13	0.49	0.03	0.24	0.14			0.64	0.08
Uniform Delay, d1				12.0	13.0	11.8	3.8	3.6			5.2	3.5
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.2	1.1	0.0	1.3	0.1			0.9	0.1
Delay (s)				12.2	14.1	11.9	5.1	3.7			6.1	3.6
Level of Service				B	B	B	A	A			A	A
Approach Delay (s)		0.0			13.4			3.9			5.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	40	125	95	14	988	0	0	436	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.45	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	836	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	48	151	114	18	1283	0	0	545	38
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	0	0	0	16
Lane Group Flow (vph)	0	0	0	48	151	87	18	1283	0	0	545	22
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				6.8	6.8	6.8	20.8	20.8			20.8	20.8
Effective Green, g (s)				6.8	6.8	6.8	20.8	20.8			20.8	20.8
Actuated g/C Ratio				0.19	0.19	0.19	0.58	0.58			0.58	0.58
Clearance Time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Vehicle Extension (s)				3.0	3.0	3.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				334	352	299	483	2045			2045	915
v/s Ratio Prot				0.03	c0.08			c0.36			0.15	
v/s Ratio Perm						0.06	0.02					0.01
v/c Ratio				0.14	0.43	0.29	0.04	0.63			0.27	0.02
Uniform Delay, d1				12.2	12.9	12.5	3.3	5.0			3.8	3.3
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.2	0.8	0.5	0.1	0.9			0.1	0.0
Delay (s)				12.4	13.7	13.1	3.3	5.9			3.9	3.3
Level of Service				B	B	B	A	A			A	A
Approach Delay (s)		0.0			13.3			5.9			3.9	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	36.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: R Street & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	37	156	43	63	210	81	31	221	20	90	1054	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3495		1770	3490	
Flt Permitted	0.53	1.00	1.00	0.62	1.00	1.00	0.13	1.00		0.59	1.00	
Satd. Flow (perm)	993	1863	1583	1147	1863	1583	247	3495		1096	3490	
Peak-hour factor, PHF	0.76	0.76	0.76	0.80	0.80	0.80	0.91	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	49	205	57	79	262	101	34	243	22	110	1285	130
RTOR Reduction (vph)	0	0	25	0	0	68	0	11	0	0	12	0
Lane Group Flow (vph)	49	205	32	79	262	33	34	254	0	110	1403	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	325	610	519	376	610	519	129	1820		571	1817	
v/s Ratio Prot		0.11			c0.14			0.07			c0.40	
v/s Ratio Perm	0.05		0.02	0.07		0.02	0.14			0.10		
v/c Ratio	0.15	0.34	0.06	0.21	0.43	0.06	0.26	0.14		0.19	0.77	
Uniform Delay, d1	13.8	14.7	13.4	14.1	15.3	13.4	7.7	7.2		7.4	11.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.1	0.2	0.0	0.4	0.0		0.1	1.9	
Delay (s)	13.9	14.9	13.4	14.2	15.4	13.4	8.1	7.2		7.5	13.0	
Level of Service	B	B	B	B	B	B	A	A		A	B	
Approach Delay (s)		14.4			14.7			7.3			12.6	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: R Street & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	113	225	33	47	193	103	32	942	63	60	361	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3506		1770	3479	
Flt Permitted	0.50	1.00	1.00	0.51	1.00	1.00	0.47	1.00		0.13	1.00	
Satd. Flow (perm)	925	1863	1583	951	1863	1583	874	3506		247	3479	
Peak-hour factor, PHF	0.81	0.81	0.81	0.67	0.67	0.67	0.78	0.78	0.78	0.84	0.84	0.84
Adj. Flow (vph)	140	278	41	70	288	154	41	1208	81	71	430	55
RTOR Reduction (vph)	0	0	28	0	0	31	0	8	0	0	16	0
Lane Group Flow (vph)	140	278	13	70	288	123	41	1281	0	71	469	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	303	610	519	312	610	519	455	1826		129	1811	
v/s Ratio Prot		0.15			c0.15			c0.37			0.13	
v/s Ratio Perm	0.15		0.01	0.07		0.08	0.05			0.29		
v/c Ratio	0.46	0.46	0.03	0.22	0.47	0.24	0.09	0.70		0.55	0.26	
Uniform Delay, d1	15.5	15.4	13.2	14.2	15.5	14.2	7.0	10.5		9.3	7.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2	0.0	0.1	0.2	0.1	0.0	1.0		2.9	0.0	
Delay (s)	15.9	15.6	13.2	14.3	15.7	14.3	7.0	11.5		12.2	7.7	
Level of Service	B	B	B	B	B	B	A	B		B	A	
Approach Delay (s)		15.5			15.1			11.4			8.3	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	79	38	0	0	0	21	307	42	169	1217	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.98		1.00	0.98	
Flt Protected		0.99	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1837	1583				1770	3475		1770	3478	
Flt Permitted		0.99	1.00				0.13	1.00		0.53	1.00	
Satd. Flow (perm)		1837	1583				243	3475		988	3478	
Peak-hour factor, PHF	0.74	0.74	0.74	0.92	0.92	0.92	0.94	0.94	0.94	0.87	0.87	0.87
Adj. Flow (vph)	41	107	51	0	0	0	22	327	45	194	1399	184
RTOR Reduction (vph)	0	0	16	0	0	0	0	10	0	0	10	0
Lane Group Flow (vph)	0	148	35	0	0	0	22	362	0	194	1573	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		6.3	6.3				30.6	30.6		30.6	30.6	
Effective Green, g (s)		6.3	6.3				30.6	30.6		30.6	30.6	
Actuated g/C Ratio		0.14	0.14				0.66	0.66		0.66	0.66	
Clearance Time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2				4.1	4.1		4.1	4.1	
Lane Grp Cap (vph)		251	216				161	2307		656	2309	
v/s Ratio Prot		c0.08						0.10			c0.45	
v/s Ratio Perm			0.02				0.09			0.20		
v/c Ratio		0.59	0.16				0.14	0.16		0.30	0.68	
Uniform Delay, d1		18.7	17.6				2.9	2.9		3.2	4.8	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.3	0.1				0.6	0.0		0.4	0.9	
Delay (s)		21.0	17.7				3.4	3.0		3.6	5.7	
Level of Service		C	B				A	A		A	A	
Approach Delay (s)		20.1			0.0			3.0			5.5	
Approach LOS		C			A			A			A	

Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
30: U Street & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	75	136	20	0	0	0	23	965	83	140	564	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1830	1583				1770	3497		1770	3484	
Flt Permitted		0.98	1.00				0.39	1.00		0.13	1.00	
Satd. Flow (perm)		1830	1583				735	3497		244	3484	
Peak-hour factor, PHF	0.70	0.70	0.70	0.92	0.92	0.92	0.72	0.72	0.72	0.95	0.95	0.95
Adj. Flow (vph)	107	194	29	0	0	0	32	1340	115	147	594	69
RTOR Reduction (vph)	0	0	20	0	0	0	0	7	0	0	11	0
Lane Group Flow (vph)	0	301	9	0	0	0	32	1448	0	147	652	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		11.5	11.5				30.5	30.5		30.5	30.5	
Effective Green, g (s)		11.5	11.5				30.5	30.5		30.5	30.5	
Actuated g/C Ratio		0.22	0.22				0.60	0.60		0.60	0.60	
Clearance Time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2				4.1	4.1		4.1	4.1	
Lane Grp Cap (vph)		411	356				438	2083		145	2075	
v/s Ratio Prot		c0.16						0.41			0.19	
v/s Ratio Perm			0.01				0.04			c0.60		
v/c Ratio		0.73	0.02				0.07	0.70		1.01	0.31	
Uniform Delay, d1		18.4	15.5				4.4	7.1		10.4	5.1	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7	0.0				0.1	1.1		78.4	0.1	
Delay (s)		24.1	15.5				4.5	8.3		88.8	5.3	
Level of Service		C	B				A	A		F	A	
Approach Delay (s)		23.4			0.0			8.2			20.4	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	903	0	337	623	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.85	0.85	0.89	0.89	0.77	0.77
Adj. Flow (vph)	0	1062	0	379	809	0
RTOR Reduction (vph)	0	547	0	0	0	0
Lane Group Flow (vph)	0	515	0	379	809	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		18.2		11.1	17.7	
Effective Green, g (s)		18.2		11.1	17.7	
Actuated g/C Ratio		0.49		0.30	0.47	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		1353		1048	1670	
v/s Ratio Prot				c0.11	c0.23	
v/s Ratio Perm		0.18				
v/c Ratio		0.38		0.36	0.48	
Uniform Delay, d1		6.1		10.4	6.8	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.3	
Delay (s)		6.2		10.6	7.1	
Level of Service		A		B	A	
Approach Delay (s)	6.2			10.6	7.1	
Approach LOS	A			B	A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	8.7
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	313	0	1041	467	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.91	0.91	0.72	0.72	0.92	0.92
Adj. Flow (vph)	0	344	0	1446	508	0
RTOR Reduction (vph)	0	234	0	0	0	0
Lane Group Flow (vph)	0	110	0	1446	508	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		13.8		21.0	13.3	
Effective Green, g (s)		13.8		21.0	13.3	
Actuated g/C Ratio		0.32		0.49	0.31	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		894		1728	1095	
v/s Ratio Prot				c0.41	c0.14	
v/s Ratio Perm		0.04				
v/c Ratio		0.12		0.84	0.46	
Uniform Delay, d1		10.3		9.5	12.0	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.0		3.7	0.4	
Delay (s)		10.3		13.2	12.4	
Level of Service		B		B	B	
Approach Delay (s)	10.3			13.2	12.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	500	5	0	289	0	0	0	0	434	920	819
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3534			3539					1610	3383	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3534			3539					1610	3383	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.72	0.72	0.72	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	581	6	0	401	0	0	0	0	477	1011	900
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	163
Lane Group Flow (vph)	0	585	0	0	401	0	0	0	0	429	1059	737
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		11.7			11.7					16.1	16.1	16.1
Effective Green, g (s)		11.7			11.7					16.1	16.1	16.1
Actuated g/C Ratio		0.33			0.33					0.45	0.45	0.45
Clearance Time (s)		4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1155			1157					724	1521	712
v/s Ratio Prot		c0.17			0.11							
v/s Ratio Perm										0.27	0.31	c0.47
v/c Ratio		0.51			0.35					0.59	0.70	1.03
Uniform Delay, d1		9.7			9.1					7.4	7.9	9.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.4			0.2					1.3	1.4	42.9
Delay (s)		10.1			9.3					8.7	9.3	52.8
Level of Service		B			A					A	A	D
Approach Delay (s)		10.1			9.3			0.0			25.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
32: E Divisadero St & 41 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑					↰	↰↑↑	↱
Volume (vph)	0	1004	9	0	254	0	0	0	0	543	308	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		3535			3539					1610	3314	1583
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		3535			3539					1610	3314	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	1128	10	0	262	0	0	0	0	560	318	319
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	200
Lane Group Flow (vph)	0	1136	0	0	262	0	0	0	0	286	592	119
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		15.5			15.5					14.0	14.0	14.0
Effective Green, g (s)		15.5			15.5					14.0	14.0	14.0
Actuated g/C Ratio		0.41			0.41					0.37	0.37	0.37
Clearance Time (s)		4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1461			1463					601	1237	591
v/s Ratio Prot		c0.32			0.07							
v/s Ratio Perm										0.18	0.18	0.08
v/c Ratio		0.78			0.18					0.48	0.48	0.20
Uniform Delay, d1		9.5			7.0					9.0	9.0	8.0
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		2.7			0.1					0.6	0.3	0.2
Delay (s)		12.2			7.0					9.6	9.3	8.1
Level of Service		B			A					A	A	A
Approach Delay (s)		12.2			7.0			0.0			9.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑	↰	↱
Volume (vph)	133	186	0	413	212	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.1	4.1		4.1	4.1	4.1
Lane Util. Factor	0.95	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		3539	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		3539	1770	1583
Peak-hour factor, PHF	0.83	0.83	0.75	0.75	0.82	0.82
Adj. Flow (vph)	160	224	0	551	259	206
RTOR Reduction (vph)	0	147	0	0	0	99
Lane Group Flow (vph)	160	77	0	551	259	107
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	20.3	20.3		20.3	30.8	30.8
Effective Green, g (s)	20.3	20.3		20.3	30.8	30.8
Actuated g/C Ratio	0.34	0.34		0.34	0.52	0.52
Clearance Time (s)	4.1	4.1		4.1	4.1	4.1
Vehicle Extension (s)	3.0	3.0		3.0	0.2	0.2
Lane Grp Cap (vph)	1211	542		1211	919	822
v/s Ratio Prot	0.05			c0.16	c0.15	
v/s Ratio Perm		0.05				0.07
v/c Ratio	0.13	0.14		0.45	0.28	0.13
Uniform Delay, d1	13.4	13.5		15.2	8.0	7.3
Progression Factor	1.00	1.00		0.63	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.2	0.1	0.0
Delay (s)	13.5	13.6		9.8	8.1	7.4
Level of Service	B	B		A	A	A
Approach Delay (s)	13.5			9.8	7.8	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	8.2
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑	↰	↱
Volume (vph)	374	730	0	341	125	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.1	4.1		4.1	4.1	4.1
Lane Util. Factor	0.95	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		3539	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		3539	1770	1583
Peak-hour factor, PHF	0.73	0.73	0.92	0.92	0.95	0.95
Adj. Flow (vph)	512	1000	0	371	132	294
RTOR Reduction (vph)	0	622	0	0	0	59
Lane Group Flow (vph)	512	378	0	371	132	235
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	21.2	21.2		21.2	26.7	26.7
Effective Green, g (s)	21.2	21.2		21.2	26.7	26.7
Actuated g/C Ratio	0.38	0.38		0.38	0.48	0.48
Clearance Time (s)	4.1	4.1		4.1	4.1	4.1
Vehicle Extension (s)	3.0	3.0		3.0	0.2	0.2
Lane Grp Cap (vph)	1337	598		1337	842	753
v/s Ratio Prot	0.14			0.10	0.07	
v/s Ratio Perm		c0.24				c0.15
v/c Ratio	0.38	0.63		0.28	0.16	0.31
Uniform Delay, d1	12.7	14.3		12.1	8.3	9.0
Progression Factor	1.00	1.00		0.59	1.00	1.00
Incremental Delay, d2	0.2	2.2		0.1	0.0	0.1
Delay (s)	12.9	16.4		7.3	8.4	9.1
Level of Service	B	B		A	A	A
Approach Delay (s)	15.2			7.3	8.9	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	8.2
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	394	522	332	531	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.1	4.1	4.1		
Lane Util. Factor	1.00	0.95	0.95	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1947	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1947	3893	3893	1742		
Peak-hour factor, PHF	0.84	0.84	0.79	0.79	0.92	0.92
Adj. Flow (vph)	469	621	420	672	0	0
RTOR Reduction (vph)	0	0	0	437	0	0
Lane Group Flow (vph)	469	621	420	235	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	6.4	30.8	20.7	20.7		
Effective Green, g (s)	6.4	30.8	20.7	20.7		
Actuated g/C Ratio	0.11	0.52	0.35	0.35		
Clearance Time (s)	3.7	4.1	4.1	4.1		
Vehicle Extension (s)	8.0	0.2	4.1	4.1		
Lane Grp Cap (vph)	210	2022	1359	608		
v/s Ratio Prot	c0.24	0.16	0.11			
v/s Ratio Perm				c0.13		
v/c Ratio	2.23	0.31	0.31	0.39		
Uniform Delay, d1	26.4	8.1	14.1	14.5		
Progression Factor	1.00	1.00	1.19	3.23		
Incremental Delay, d2	570.1	0.0	0.2	0.5		
Delay (s)	596.6	8.2	17.0	47.4		
Level of Service	F	A	B	D		
Approach Delay (s)		261.3	35.7		0.0	
Approach LOS		F	D		A	

Intersection Summary

HCM Average Control Delay	148.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	32.2
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	690	757	263	520	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.1	4.1	4.1		
Lane Util. Factor	1.00	0.95	0.95	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1947	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1947	3893	3893	1742		
Peak-hour factor, PHF	0.86	0.86	0.89	0.89	0.92	0.92
Adj. Flow (vph)	802	880	296	584	0	0
RTOR Reduction (vph)	0	0	0	411	0	0
Lane Group Flow (vph)	802	880	296	173	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	6.4	26.7	16.6	16.6		
Effective Green, g (s)	6.4	26.7	16.6	16.6		
Actuated g/C Ratio	0.11	0.48	0.30	0.30		
Clearance Time (s)	3.7	4.1	4.1	4.1		
Vehicle Extension (s)	8.0	0.2	4.1	4.1		
Lane Grp Cap (vph)	222	1853	1152	515		
v/s Ratio Prot	c0.41	c0.23	0.08			
v/s Ratio Perm				0.10		
v/c Ratio	3.61	0.47	0.26	0.34		
Uniform Delay, d1	24.9	10.0	15.1	15.4		
Progression Factor	1.00	1.00	1.17	2.81		
Incremental Delay, d2	1186.8	0.1	0.2	0.5		
Delay (s)	1211.6	10.0	17.8	43.9		
Level of Service	F	B	B	D		
Approach Delay (s)		583.0	35.1		0.0	
Approach LOS		F	D		A	

Intersection Summary

HCM Average Control Delay	394.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	29.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
34: Tulare St & First Steet

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	596	88	93	712	52	388	274	27	186	283	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3503		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3503		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.85	0.85	0.85	0.69	0.69	0.69
Adj. Flow (vph)	112	641	95	101	774	57	456	322	32	270	410	239
RTOR Reduction (vph)	0	0	60	0	8	0	0	0	26	0	0	214
Lane Group Flow (vph)	112	641	35	101	823	0	456	322	6	270	410	25
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	5.2	23.0	23.0	5.1	22.6		11.1	11.8	11.8	6.1	6.5	6.5
Effective Green, g (s)	5.2	23.0	23.0	5.1	22.6		11.1	11.8	11.8	6.1	6.5	6.5
Actuated g/C Ratio	0.08	0.36	0.36	0.08	0.36		0.18	0.19	0.19	0.10	0.10	0.10
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.2		2.0	5.0	5.0	2.0	5.2	5.2
Lane Grp Cap (vph)	282	1288	576	277	1253		603	661	296	331	364	163
v/s Ratio Prot	c0.03	0.18		0.03	c0.24		c0.13	0.09		0.08	c0.12	
v/s Ratio Perm			0.02						0.00			0.02
v/c Ratio	0.40	0.50	0.06	0.36	0.66		0.76	0.49	0.02	0.82	1.13	0.15
Uniform Delay, d1	27.5	15.6	13.1	27.5	17.0		24.8	23.0	21.0	28.0	28.4	25.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	0.1	0.3	1.8		4.8	1.2	0.1	13.6	86.0	1.0
Delay (s)	27.8	16.2	13.2	27.8	18.8		29.6	24.2	21.0	41.6	114.4	26.8
Level of Service	C	B	B	C	B		C	C	C	D	F	C
Approach Delay (s)		17.4			19.8			27.1			70.2	
Approach LOS		B			B			C			E	

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	17.8
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	853	174	101	578	84	347	413	48	237	325	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3472		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3472		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.91	0.91	0.91	0.84	0.84	0.84	0.86	0.86	0.86
Adj. Flow (vph)	422	992	202	111	635	92	413	492	57	276	378	94
RTOR Reduction (vph)	0	0	91	0	17	0	0	0	46	0	0	84
Lane Group Flow (vph)	422	992	111	111	710	0	413	492	11	276	378	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	8.0	25.8	25.8	5.4	22.9		10.9	12.4	12.4	6.0	7.2	7.2
Effective Green, g (s)	8.0	25.8	25.8	5.4	22.9		10.9	12.4	12.4	6.0	7.2	7.2
Actuated g/C Ratio	0.12	0.39	0.39	0.08	0.34		0.16	0.19	0.19	0.09	0.11	0.11
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.6	4.6	4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.2		2.0	5.0	5.0	2.0	5.2	5.2
Lane Grp Cap (vph)	411	1367	611	278	1190		560	657	294	308	381	171
v/s Ratio Prot	c0.12	c0.28		0.03	0.20		c0.12	c0.14		0.08	0.11	
v/s Ratio Perm			0.07						0.01			0.01
v/c Ratio	1.03	0.73	0.18	0.40	0.60		0.74	0.75	0.04	0.90	0.99	0.06
Uniform Delay, d1	29.4	17.5	13.5	29.2	18.1		26.6	25.7	22.3	30.1	29.8	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.4	2.4	0.3	0.3	1.3		4.4	5.6	0.1	26.0	44.0	0.3
Delay (s)	80.8	19.9	13.8	29.5	19.4		30.9	31.3	22.4	56.1	73.7	27.1
Level of Service	F	B	B	C	B		C	C	C	E	E	C
Approach Delay (s)		35.0			20.7			30.6			61.4	
Approach LOS		D			C			C			E	

Intersection Summary

HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

35: H St & Mariposa St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	4	345	8	26	117	23	6	28	9	83	11	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5			4.5			4.5			4.5	
Lane Util. Factor	1.00	0.95			1.00			1.00			1.00	
Frt	1.00	1.00			0.98			0.97			0.95	
Flt Protected	0.95	1.00			0.99			0.99			0.97	
Satd. Flow (prot)	1770	3527			1814			1796			1726	
Flt Permitted	0.70	1.00			0.92			0.96			0.79	
Satd. Flow (perm)	1312	3527			1682			1731			1410	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.77	0.77	0.77	0.78	0.78	0.78
Adj. Flow (vph)	4	383	9	28	127	25	8	36	12	106	14	63
RTOR Reduction (vph)	0	2	0	0	8	0	0	9	0	0	30	0
Lane Group Flow (vph)	4	390	0	0	172	0	0	47	0	0	153	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	30.3	30.3			30.3			15.4			15.4	
Effective Green, g (s)	30.3	30.3			30.3			15.4			15.4	
Actuated g/C Ratio	0.55	0.55			0.55			0.28			0.28	
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	
Vehicle Extension (s)	0.2	0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)	727	1954			932			487			397	
v/s Ratio Prot		c0.11										
v/s Ratio Perm	0.00				0.10			0.03			c0.11	
v/c Ratio	0.01	0.20			0.18			0.10			0.38	
Uniform Delay, d1	5.5	6.1			6.1			14.5			15.8	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0			0.0			0.0			0.2	
Delay (s)	5.5	6.1			6.1			14.5			16.1	
Level of Service	A	A			A			B			B	
Approach Delay (s)		6.1			6.1			14.5			16.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
35: H St & Mariposa St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	32	297	10	21	261	129	50	75	22	28	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5			4.5			4.5			4.5	
Lane Util. Factor	1.00	0.95			1.00			1.00			1.00	
Frt	1.00	1.00			0.96			0.98			0.92	
Flt Protected	0.95	1.00			1.00			0.98			0.98	
Satd. Flow (prot)	1770	3522			1779			1794			1682	
Flt Permitted	0.47	1.00			0.97			0.87			0.87	
Satd. Flow (perm)	872	3522			1734			1593			1490	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.85	0.85	0.85	0.78	0.78	0.78
Adj. Flow (vph)	38	349	12	24	303	150	59	88	26	36	6	65
RTOR Reduction (vph)	0	4	0	0	26	0	0	9	0	0	43	0
Lane Group Flow (vph)	38	357	0	0	451	0	0	164	0	0	64	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	19.3	19.3			19.3			14.0			14.0	
Effective Green, g (s)	19.3	19.3			19.3			14.0			14.0	
Actuated g/C Ratio	0.46	0.46			0.46			0.33			0.33	
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	
Vehicle Extension (s)	0.2	0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)	398	1607			791			527			493	
v/s Ratio Prot		0.10										
v/s Ratio Perm	0.04				c0.26			c0.10			0.04	
v/c Ratio	0.10	0.22			0.57			0.31			0.13	
Uniform Delay, d1	6.5	7.0			8.5			10.6			9.9	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0			0.6			0.1			0.0	
Delay (s)	6.6	7.0			9.1			10.7			9.9	
Level of Service	A	A			A			B			A	
Approach Delay (s)		6.9			9.1			10.7			9.9	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	42.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
36: C Street & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	55	21	10	40	25	39	11	399	31	93	441	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1694		1770	3501		1770	3482	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.44	1.00		0.43	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1694		817	3501		807	3482	
Peak-hour factor, PHF	0.83	0.83	0.83	0.84	0.84	0.84	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	66	25	12	48	30	46	15	539	42	107	507	61
RTOR Reduction (vph)	0	0	11	0	42	0	0	8	0	0	14	0
Lane Group Flow (vph)	66	25	2	48	34	0	15	573	0	107	554	0
Turn Type	Prot		Perm	Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	3.1	5.0	5.0	2.0	3.9		20.6	20.6		20.6	20.6	
Effective Green, g (s)	3.1	5.0	5.0	2.0	3.9		20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.08	0.12	0.12	0.05	0.10		0.52	0.52		0.52	0.52	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	137	233	198	89	165		421	1803		416	1793	
v/s Ratio Prot	c0.04	0.01		0.03	c0.02			c0.16			0.16	
v/s Ratio Perm			0.00				0.02			0.13		
v/c Ratio	0.48	0.11	0.01	0.54	0.21		0.04	0.32		0.26	0.31	
Uniform Delay, d1	17.7	15.5	15.3	18.6	16.6		4.8	5.6		5.4	5.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.1	0.0	3.1	0.2		0.1	0.3		0.9	0.3	
Delay (s)	18.7	15.6	15.3	21.7	16.9		4.9	5.9		6.3	5.9	
Level of Service	B	B	B	C	B		A	A		A	A	
Approach Delay (s)		17.5			18.7			5.9			5.9	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
36: C Street & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	141	99	25	98	90	77	14	439	50	104	418	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1733		1770	3485		1770	3429	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1733		773	3485		731	3429	
Peak-hour factor, PHF	0.72	0.72	0.72	0.87	0.87	0.87	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	196	138	35	113	103	89	17	535	61	111	445	116
RTOR Reduction (vph)	0	0	28	0	57	0	0	15	0	0	41	0
Lane Group Flow (vph)	196	138	7	113	135	0	17	581	0	111	520	0
Turn Type	Prot		Perm	Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	8.3	9.7	9.7	5.4	6.8		19.9	19.9		19.9	19.9	
Effective Green, g (s)	8.3	9.7	9.7	5.4	6.8		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.18	0.20	0.20	0.11	0.14		0.42	0.42		0.42	0.42	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	310	381	324	202	249		325	1463		307	1440	
v/s Ratio Prot	c0.11	c0.07		0.06	c0.08			c0.17			0.15	
v/s Ratio Perm			0.00				0.02			0.15		
v/c Ratio	0.63	0.36	0.02	0.56	0.54		0.05	0.40		0.36	0.36	
Uniform Delay, d1	18.1	16.2	15.1	19.9	18.8		8.2	9.6		9.4	9.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.2	0.0	1.9	1.3		0.2	0.5		2.0	0.4	
Delay (s)	21.2	16.4	15.1	21.8	20.1		8.3	10.1		11.4	9.8	
Level of Service	C	B	B	C	C		A	B		B	A	
Approach Delay (s)		18.8			20.7			10.0			10.1	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
37: 99 SB Off-Ramp & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	545	118	291	0	0	0	0	424	64	61	293	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3470		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3470		1770	3539	
Peak-hour factor, PHF	0.76	0.76	0.76	0.92	0.92	0.92	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	717	155	383	0	0	0	0	573	86	70	337	0
RTOR Reduction (vph)	0	0	210	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	717	155	173	0	0	0	0	642	0	70	337	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	30.5	30.5	30.5					17.2		4.6	27.0	
Effective Green, g (s)	30.5	30.5	30.5					17.2		4.6	27.0	
Actuated g/C Ratio	0.45	0.45	0.45					0.26		0.07	0.40	
Clearance Time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Vehicle Extension (s)	6.2	6.2	6.2					0.2		2.0	0.2	
Lane Grp Cap (vph)	801	843	716					886		121	1418	
v/s Ratio Prot	c0.41	0.08						c0.18		c0.04	0.10	
v/s Ratio Perm			0.11									
v/c Ratio	0.90	0.18	0.24					0.72		0.58	0.24	
Uniform Delay, d1	17.0	11.0	11.3					22.9		30.5	13.4	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	13.9	0.3	0.5					2.5		4.1	0.0	
Delay (s)	30.9	11.3	11.9					25.4		34.6	13.4	
Level of Service	C	B	B					C		C	B	
Approach Delay (s)		22.6			0.0			25.4			17.1	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	15.1
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	173	180	200	0	0	0	0	554	101	244	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3457		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3457		1770	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	194	202	225	0	0	0	0	609	111	260	455	0
RTOR Reduction (vph)	0	0	152	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	194	202	73	0	0	0	0	700	0	260	455	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	18.8	18.8	18.8					17.6		6.3	29.1	
Effective Green, g (s)	18.8	18.8	18.8					17.6		6.3	29.1	
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.11	0.50	
Clearance Time (s)	4.7	4.7	4.7					5.2		5.2	5.2	
Vehicle Extension (s)	6.2	6.2	6.2					0.2		2.0	0.2	
Lane Grp Cap (vph)	576	606	515					1053		193	1782	
v/s Ratio Prot	c0.11	0.11						c0.20		c0.15	0.13	
v/s Ratio Perm			0.05									
v/c Ratio	0.34	0.33	0.14					0.66		1.35	0.26	
Uniform Delay, d1	14.8	14.8	13.8					17.5		25.8	8.2	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.0	0.4					1.2		186.5	0.0	
Delay (s)	15.8	15.7	14.2					18.8		212.3	8.2	
Level of Service	B	B	B					B		F	A	
Approach Delay (s)		15.2			0.0			18.8			82.4	
Approach LOS		B			A			B			F	

Intersection Summary

HCM Average Control Delay	39.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	15.1
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
38: 99 NB On-Ramp & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	91	156	440	178	788	0	0	282	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					3475	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3475	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	100	171	484	187	829	0	0	307	166
RTOR Reduction (vph)	0	0	0	0	0	64	0	0	0	0	0	125
Lane Group Flow (vph)	0	0	0	0	271	420	187	829	0	0	307	41
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					25.1	25.1	10.2	30.2			16.3	16.3
Effective Green, g (s)					25.1	25.1	10.2	30.2			16.3	16.3
Actuated g/C Ratio					0.38	0.38	0.15	0.46			0.25	0.25
Clearance Time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Vehicle Extension (s)					5.0	5.0	2.0	0.2			0.2	0.2
Lane Grp Cap (vph)					1324	603	274	1622			875	392
v/s Ratio Prot					0.08		c0.11	c0.23			0.09	
v/s Ratio Perm						c0.27						0.03
v/c Ratio					0.20	0.70	0.68	0.51			0.35	0.10
Uniform Delay, d1					13.7	17.2	26.3	12.6			20.4	19.2
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.2	4.4	5.5	0.1			0.1	0.0
Delay (s)					13.9	21.6	31.8	12.7			20.5	19.2
Level of Service					B	C	C	B			C	B
Approach Delay (s)		0.0			18.8			16.3			20.1	
Approach LOS		A			B			B			C	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
38: 99 NB On-Ramp & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	95	108	191	306	393	0	0	588	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Lane Util. Factor					0.95	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					3459	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3459	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	0	0	0	110	126	222	373	479	0	0	684	673
RTOR Reduction (vph)	0	0	0	0	0	171	0	0	0	0	0	390
Lane Group Flow (vph)	0	0	0	0	236	51	373	479	0	0	684	283
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					13.0	13.0	11.4	32.5			17.4	17.4
Effective Green, g (s)					13.0	13.0	11.4	32.5			17.4	17.4
Actuated g/C Ratio					0.23	0.23	0.20	0.58			0.31	0.31
Clearance Time (s)					5.4	5.4	3.7	5.2			5.2	5.2
Vehicle Extension (s)					5.0	5.0	2.0	0.2			0.2	0.2
Lane Grp Cap (vph)					802	367	360	2050			1098	491
v/s Ratio Prot					c0.07		c0.21	0.14			c0.19	
v/s Ratio Perm						0.03						0.18
v/c Ratio					0.29	0.14	1.04	0.23			0.62	0.58
Uniform Delay, d1					17.8	17.1	22.4	5.7			16.5	16.2
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.4	0.4	57.1	0.0			0.8	1.0
Delay (s)					18.2	17.5	79.4	5.8			17.3	17.3
Level of Service					B	B	E	A			B	B
Approach Delay (s)		0.0			17.8			38.0			17.3	
Approach LOS		A			B			D			B	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	14.3
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	2	277	324	38	64	36	22	837	25	2	210	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1947	3893	1742	1947	3684		1947	3893	1742	1947	3893	1742
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1947	3893	1742	1947	3684		1947	3893	1742	1947	3893	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	301	352	41	70	39	24	910	27	2	228	8
RTOR Reduction (vph)	0	0	264	0	29	0	0	0	18	0	0	5
Lane Group Flow (vph)	2	301	88	41	80	0	24	910	9	2	228	3
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Actuated Green, G (s)	0.5	11.0	11.0	1.2	11.7		0.5	15.1	15.1	0.5	15.1	15.1
Effective Green, g (s)	0.5	11.0	11.0	1.2	11.7		0.5	15.1	15.1	0.5	15.1	15.1
Actuated g/C Ratio	0.01	0.25	0.25	0.03	0.27		0.01	0.34	0.34	0.01	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	22	978	437	53	984		22	1342	601	22	1342	601
v/s Ratio Prot	0.00	c0.08		c0.02	0.02		c0.01	c0.23		0.00	0.06	
v/s Ratio Perm			0.05						0.01			0.00
v/c Ratio	0.09	0.31	0.20	0.77	0.08		1.09	0.68	0.02	0.09	0.17	0.00
Uniform Delay, d1	21.4	13.3	12.9	21.2	12.0		21.6	12.3	9.5	21.4	10.0	9.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2	0.2	49.7	0.0		221.9	1.4	0.0	1.8	0.1	0.0
Delay (s)	23.2	13.5	13.2	70.9	12.1		243.6	13.6	9.5	23.2	10.0	9.4
Level of Service	C	B	B	E	B		F	B	A	C	B	A
Approach Delay (s)		13.3			28.1			19.3			10.1	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
40: H St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	9	95	298	9	216	58	78	319	19	7	654	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1947	3893	1742	1947	3770		1947	3893	1742	1947	3893	1742
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1947	3893	1742	1947	3770		1947	3893	1742	1947	3893	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	103	324	10	235	63	85	347	21	8	711	2
RTOR Reduction (vph)	0	0	257	0	48	0	0	0	13	0	0	1
Lane Group Flow (vph)	10	103	67	10	250	0	85	347	8	8	711	1
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Actuated Green, G (s)	0.5	8.7	8.7	0.5	8.7		2.0	16.1	16.1	0.5	14.6	14.6
Effective Green, g (s)	0.5	8.7	8.7	0.5	8.7		2.0	16.1	16.1	0.5	14.6	14.6
Actuated g/C Ratio	0.01	0.21	0.21	0.01	0.21		0.05	0.39	0.39	0.01	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	23	810	363	23	785		93	1499	671	23	1360	608
v/s Ratio Prot	0.01	0.03		c0.01	c0.07		c0.04	0.09		0.00	c0.18	
v/s Ratio Perm			0.04						0.00			0.00
v/c Ratio	0.43	0.13	0.19	0.43	0.32		0.91	0.23	0.01	0.35	0.52	0.00
Uniform Delay, d1	20.5	13.5	13.6	20.5	14.0		19.8	8.7	7.9	20.5	10.8	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.6	0.1	0.2	12.6	0.2		65.4	0.1	0.0	8.9	0.4	0.0
Delay (s)	33.1	13.5	13.9	33.1	14.3		85.2	8.8	7.9	29.4	11.2	8.9
Level of Service	C	B	B	C	B		F	A	A	C	B	A
Approach Delay (s)		14.2			14.9			23.1			11.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	83	23	19	12	1	3	35	72	390	79	54	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	15	12	12	12	12	12	12	12
Total Lost time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Lane Util. Factor	1.00	1.00			1.00	1.00			0.95		1.00	1.00
Frt	1.00	0.93			1.00	0.86			0.98		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1770	1737			1947	1607			3439		1770	1863
Flt Permitted	1.00	1.00			1.00	1.00			0.87		0.52	1.00
Satd. Flow (perm)	1863	1737			2049	1607			3022		968	1863
Peak-hour factor, PHF	0.82	0.82	0.82	0.79	0.79	0.79	0.79	0.96	0.96	0.96	0.77	0.77
Adj. Flow (vph)	101	28	23	15	1	4	44	75	406	82	70	244
RTOR Reduction (vph)	0	0	0	0	0	38	0	0	25	0	0	0
Lane Group Flow (vph)	101	51	0	0	16	10	0	0	538	0	70	244
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	2.7	2.7			2.7	2.7			7.7		7.7	7.7
Effective Green, g (s)	2.7	2.7			2.7	2.7			7.7		7.7	7.7
Actuated g/C Ratio	0.14	0.14			0.14	0.14			0.39		0.39	0.39
Clearance Time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Vehicle Extension (s)	0.2	0.2			0.2	0.2			0.2		0.2	0.2
Lane Grp Cap (vph)	252	234			277	217			1163		373	717
v/s Ratio Prot		0.03				0.01						0.13
v/s Ratio Perm	c0.05				0.01				c0.18		0.07	
v/c Ratio	0.40	0.22			0.06	0.05			0.46		0.19	0.34
Uniform Delay, d1	7.9	7.7			7.5	7.5			4.6		4.1	4.4
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	0.2			0.0	0.0			0.1		0.1	0.1
Delay (s)	8.3	7.9			7.6	7.6			4.7		4.2	4.5
Level of Service	A	A			A	A			A		A	A
Approach Delay (s)		8.2				7.6			4.7			4.2
Approach LOS		A				A			A			A

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	20.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	5	117
Ideal Flow (vphpl)	1900	1900
Lane Width	15	12
Total Lost time (s)	4.8	
Lane Util. Factor	1.00	
Frt	0.85	
Flt Protected	1.00	
Satd. Flow (prot)	1742	
Flt Permitted	1.00	
Satd. Flow (perm)	1742	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	6	152
RTOR Reduction (vph)	93	0
Lane Group Flow (vph)	65	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	7.7	
Effective Green, g (s)	7.7	
Actuated g/C Ratio	0.39	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	671	
v/s Ratio Prot		
v/s Ratio Perm	0.04	
v/c Ratio	0.10	
Uniform Delay, d1	3.9	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	4.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
41: To H St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	139	8	63	86	3	14	115	11	334	20	72	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	15	12	12	12	12	12	12	12
Total Lost time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Lane Util. Factor	1.00	1.00			1.00	1.00			0.95		1.00	1.00
Frt	1.00	0.87			1.00	0.87			0.99		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			1.00		0.95	1.00
Satd. Flow (prot)	1770	1615			1947	1614			3505		1770	1863
Flt Permitted	0.65	1.00			0.68	1.00			0.93		0.52	1.00
Satd. Flow (perm)	1216	1615			1387	1614			3281		961	1863
Peak-hour factor, PHF	0.57	0.57	0.57	0.78	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92
Adj. Flow (vph)	244	14	111	110	4	18	147	12	367	22	78	559
RTOR Reduction (vph)	0	0	0	0	0	103	0	0	7	0	0	0
Lane Group Flow (vph)	244	125	0	0	114	62	0	0	394	0	78	559
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	10.0	10.0			10.0	10.0			14.1		14.1	14.1
Effective Green, g (s)	10.0	10.0			10.0	10.0			14.1		14.1	14.1
Actuated g/C Ratio	0.30	0.30			0.30	0.30			0.42		0.42	0.42
Clearance Time (s)	4.8	4.8			4.8	4.8			4.8		4.8	4.8
Vehicle Extension (s)	0.2	0.2			0.2	0.2			0.2		0.2	0.2
Lane Grp Cap (vph)	361	479			412	479			1373		402	779
v/s Ratio Prot		0.08				0.04						c0.30
v/s Ratio Perm	c0.20				0.08				0.12		0.08	
v/c Ratio	0.68	0.26			0.28	0.13			0.29		0.19	0.72
Uniform Delay, d1	10.4	9.0			9.1	8.7			6.5		6.2	8.1
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	3.9	0.1			0.1	0.0			0.0		0.1	2.6
Delay (s)	14.3	9.1			9.2	8.7			6.5		6.3	10.8
Level of Service	B	A			A	A			A		A	B
Approach Delay (s)		12.6				8.9			6.5			9.7
Approach LOS		B				A			A			A

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	33.7	Sum of lost time (s)	9.6
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	4	77
Ideal Flow (vphpl)	1900	1900
Lane Width	15	12
Total Lost time (s)	4.8	
Lane Util. Factor	1.00	
Frt	0.85	
Flt Protected	1.00	
Satd. Flow (prot)	1742	
Flt Permitted	1.00	
Satd. Flow (perm)	1742	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	4	84
RTOR Reduction (vph)	49	0
Lane Group Flow (vph)	39	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	14.1	
Effective Green, g (s)	14.1	
Actuated g/C Ratio	0.42	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	729	
v/s Ratio Prot		
v/s Ratio Perm	0.02	
v/c Ratio	0.05	
Uniform Delay, d1	5.8	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	5.8	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
42: Van Ness Ave & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	69	207	114	99	265	204	146	416	92	63	228	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.93		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1763		1770	3308		1770	3443		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1763		1770	3308		1770	3443		1770	3432	
Peak-hour factor, PHF	0.84	0.84	0.84	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Adj. Flow (vph)	82	246	136	116	312	240	152	433	96	79	285	72
RTOR Reduction (vph)	0	19	0	0	140	0	0	19	0	0	24	0
Lane Group Flow (vph)	82	363	0	116	412	0	152	510	0	79	333	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.1	21.4		8.6	22.9		11.8	22.9		7.2	18.3	
Effective Green, g (s)	7.1	21.4		8.6	22.9		11.8	22.9		7.2	18.3	
Actuated g/C Ratio	0.09	0.28		0.11	0.30		0.15	0.30		0.09	0.24	
Clearance Time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	164	492		198	988		272	1028		166	819	
v/s Ratio Prot	0.05	c0.21		c0.07	0.12		c0.09	c0.15		0.04	0.10	
v/s Ratio Perm												
v/c Ratio	0.50	0.74		0.59	0.42		0.56	0.50		0.48	0.41	
Uniform Delay, d1	33.1	25.1		32.4	21.6		30.0	22.1		33.0	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	6.9		4.4	0.6		2.5	0.8		2.1	0.7	
Delay (s)	35.5	32.0		36.7	22.2		32.5	22.9		35.1	25.3	
Level of Service	D	C		D	C		C	C		D	C	
Approach Delay (s)		32.6			24.7			25.1			27.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	62	200	134	126	384	140	177	299	64	61	327	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1751		1770	3397		1770	3445		1770	3471	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1751		1770	3397		1770	3445		1770	3471	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.99	0.99	0.99	0.83	0.83	0.83
Adj. Flow (vph)	71	230	154	137	417	152	179	302	65	73	394	58
RTOR Reduction (vph)	0	23	0	0	36	0	0	18	0	0	13	0
Lane Group Flow (vph)	71	361	0	137	533	0	179	349	0	73	439	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.1	22.1		11.5	26.5		12.7	25.0		7.4	19.7	
Effective Green, g (s)	7.1	22.1		11.5	26.5		12.7	25.0		7.4	19.7	
Actuated g/C Ratio	0.09	0.27		0.14	0.32		0.15	0.30		0.09	0.24	
Clearance Time (s)	4.1	4.2		4.1	4.2		4.1	4.2		4.1	4.2	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	152	468		246	1090		272	1043		159	828	
v/s Ratio Prot	0.04	c0.21		c0.08	0.16		c0.10	0.10		0.04	c0.13	
v/s Ratio Perm												
v/c Ratio	0.47	0.77		0.56	0.49		0.66	0.33		0.46	0.53	
Uniform Delay, d1	35.9	27.9		33.2	22.6		32.9	22.3		35.7	27.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	8.9		2.7	0.7		5.7	0.4		2.1	1.2	
Delay (s)	38.2	36.8		35.9	23.3		38.6	22.7		37.8	28.6	
Level of Service	D	D		D	C		D	C		D	C	
Approach Delay (s)		37.0			25.8			27.9			29.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	16.6
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	39	247	44	0	0	0	0	402	182	113	411	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.95		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5051	1583					3374		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.32	1.00	
Satd. Flow (perm)		5051	1583					3374		593	3539	
Peak-hour factor, PHF	0.80	0.80	0.80	0.92	0.92	0.92	0.77	0.77	0.77	0.94	0.94	0.94
Adj. Flow (vph)	49	309	55	0	0	0	0	522	236	120	437	0
RTOR Reduction (vph)	0	0	36	0	0	0	0	88	0	0	0	0
Lane Group Flow (vph)	0	358	19	0	0	0	0	670	0	120	437	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					31.0		31.0	31.0	
Effective Green, g (s)		20.0	20.0					31.0		31.0	31.0	
Actuated g/C Ratio		0.34	0.34					0.52		0.52	0.52	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1701	533					1761		309	1847	
v/s Ratio Prot		c0.07						0.20			0.12	
v/s Ratio Perm			0.01							c0.20		
v/c Ratio		0.21	0.03					0.38		0.39	0.24	
Uniform Delay, d1		14.1	13.2					8.5		8.5	7.7	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.3	0.0	
Delay (s)		14.1	13.2					8.5		8.8	7.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		14.0			0.0			8.5			8.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
43: M St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	47	195	38	0	0	0	0	473	125	49	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5037	1583					3428		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.33	1.00	
Satd. Flow (perm)		5037	1583					3428		611	3539	
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.81	0.81	0.81	0.91	0.91	0.91
Adj. Flow (vph)	57	238	46	0	0	0	0	584	154	54	457	0
RTOR Reduction (vph)	0	0	31	0	0	0	0	40	0	0	0	0
Lane Group Flow (vph)	0	295	15	0	0	0	0	698	0	54	457	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					31.0		31.0	31.0	
Effective Green, g (s)		20.0	20.0					31.0		31.0	31.0	
Actuated g/C Ratio		0.34	0.34					0.52		0.52	0.52	
Clearance Time (s)		4.2	4.2					4.2		4.2	4.2	
Vehicle Extension (s)		0.2	0.2					0.2		0.2	0.2	
Lane Grp Cap (vph)		1696	533					1789		319	1847	
v/s Ratio Prot		c0.06						c0.20			0.13	
v/s Ratio Perm			0.01							0.09		
v/c Ratio		0.17	0.03					0.39		0.17	0.25	
Uniform Delay, d1		13.9	13.2					8.5		7.4	7.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		0.1	0.0	
Delay (s)		13.9	13.2					8.6		7.5	7.8	
Level of Service		B	B					A		A	A	
Approach Delay (s)		13.8			0.0			8.6			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	46	136	33	50	302	0	0	569	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	15	15	15	12	12	15	15	12	12
Total Lost time (s)					4.2		4.2	4.2			4.2	
Lane Util. Factor					0.95		1.00	0.95			0.95	
Frt					0.98		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					3763		1770	3539			3463	
Flt Permitted					0.99		0.31	1.00			1.00	
Satd. Flow (perm)					3763		571	3539			3463	
Peak-hour factor, PHF	0.92	0.92	0.92	0.75	0.75	0.75	0.97	0.97	0.97	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	61	181	44	52	311	0	0	647	109
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	259	0	52	311	0	0	730	0
Turn Type				Split			Perm					
Protected Phases				2	2			4			4	
Permitted Phases							4					
Actuated Green, G (s)					19.8		23.8	23.8			23.8	
Effective Green, g (s)					19.8		23.8	23.8			23.8	
Actuated g/C Ratio					0.38		0.46	0.46			0.46	
Clearance Time (s)					4.2		4.2	4.2			4.2	
Vehicle Extension (s)					0.2		0.2	0.2			0.2	
Lane Grp Cap (vph)					1433		261	1620			1585	
v/s Ratio Prot					c0.07			0.09			c0.21	
v/s Ratio Perm							0.09					
v/c Ratio					0.18		0.20	0.19			0.46	
Uniform Delay, d1					10.7		8.4	8.4			9.7	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					0.0		0.1	0.0			0.1	
Delay (s)					10.7		8.6	8.4			9.8	
Level of Service					B		A	A			A	
Approach Delay (s)		0.0			10.7			8.4			9.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
44: P St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	44	305	94	75	561	0	0	364	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	15	15	15	12	12	15	15	12	12
Total Lost time (s)					4.2		4.2	4.2			4.2	
Lane Util. Factor					0.95		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.97	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					3750		1770	3539			3449	
Flt Permitted					1.00		0.48	1.00			1.00	
Satd. Flow (perm)					3750		899	3539			3449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	55	381	118	82	610	0	0	383	78
RTOR Reduction (vph)	0	0	0	0	47	0	0	0	0	0	33	0
Lane Group Flow (vph)	0	0	0	0	507	0	82	610	0	0	428	0
Turn Type				Split			Perm					
Protected Phases				2	2			4			4	
Permitted Phases							4					
Actuated Green, G (s)					19.8		23.8	23.8			23.8	
Effective Green, g (s)					19.8		23.8	23.8			23.8	
Actuated g/C Ratio					0.38		0.46	0.46			0.46	
Clearance Time (s)					4.2		4.2	4.2			4.2	
Vehicle Extension (s)					0.2		0.2	0.2			0.2	
Lane Grp Cap (vph)					1428		411	1620			1579	
v/s Ratio Prot					c0.14			c0.17			0.12	
v/s Ratio Perm							0.09					
v/c Ratio					0.35		0.20	0.38			0.27	
Uniform Delay, d1					11.5		8.4	9.2			8.7	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					0.1		0.1	0.1			0.0	
Delay (s)					11.6		8.5	9.3			8.8	
Level of Service					B		A	A			A	
Approach Delay (s)		0.0			11.6			9.2			8.8	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
45: R Street & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	104	183	25	83	180	53	24	204	32	68	460	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1799		1770	3539	1583	1770	3539	1583
Flt Permitted	0.58	1.00	1.00	0.62	1.00		0.42	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	1084	1863	1583	1150	1799		785	3539	1583	1110	3539	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.81	0.81	0.81	0.86	0.86	0.86
Adj. Flow (vph)	122	215	29	87	189	56	30	252	40	79	535	172
RTOR Reduction (vph)	0	0	17	0	15	0	0	0	23	0	0	97
Lane Group Flow (vph)	122	215	12	87	230	0	30	252	17	79	535	75
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4		4	4		4
Actuated Green, G (s)	25.0	25.0	25.0	25.0	25.0		26.0	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.0	25.0	25.0	25.0	25.0		26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	452	776	660	479	750		340	1534	686	481	1534	686
v/s Ratio Prot		0.12			c0.13			0.07			c0.15	
v/s Ratio Perm	0.11		0.01	0.08			0.04		0.01	0.07		0.05
v/c Ratio	0.27	0.28	0.02	0.18	0.31		0.09	0.16	0.03	0.16	0.35	0.11
Uniform Delay, d1	11.5	11.5	10.3	11.0	11.7		10.0	10.4	9.7	10.4	11.3	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.0	0.1	0.1		0.0	0.0	0.0	0.1	0.1	0.0
Delay (s)	11.6	11.6	10.3	11.1	11.8		10.1	10.4	9.7	10.4	11.4	10.1
Level of Service	B	B	B	B	B		B	B	A	B	B	B
Approach Delay (s)		11.5			11.6			10.3			11.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
45: R Street & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	150	229	39	78	215	94	43	563	81	56	305	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1778		1770	3539	1583	1770	3539	1583
Flt Permitted	0.40	1.00	1.00	0.58	1.00		0.55	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	744	1863	1583	1083	1778		1016	3539	1583	670	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.75	0.75	0.75	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	161	246	42	104	287	125	48	633	91	63	343	116
RTOR Reduction (vph)	0	0	24	0	21	0	0	0	52	0	0	66
Lane Group Flow (vph)	161	246	18	104	391	0	48	633	39	63	343	50
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4		4	4		4
Actuated Green, G (s)	25.3	25.3	25.3	25.3	25.3		26.0	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.3	25.3	25.3	25.3	25.3		26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	312	782	664	454	746		438	1526	683	289	1526	683
v/s Ratio Prot		0.13			c0.22			c0.18			0.10	
v/s Ratio Perm	0.22		0.01	0.10			0.05		0.02	0.09		0.03
v/c Ratio	0.52	0.31	0.03	0.23	0.52		0.11	0.41	0.06	0.22	0.22	0.07
Uniform Delay, d1	13.0	11.7	10.3	11.2	13.0		10.2	11.9	10.0	10.8	10.8	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.0	0.1	0.3		0.0	0.1	0.0	0.1	0.0	0.0
Delay (s)	13.6	11.8	10.3	11.3	13.3		10.3	11.9	10.0	10.9	10.8	10.1
Level of Service	B	B	B	B	B		B	B	B	B	B	B
Approach Delay (s)		12.3			12.9			11.6			10.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
46: E Divisadero St & Fresno St.

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	8	69	6	459	106	367	234	275	17	31	150	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.88	1.00	1.00	0.97	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	1841		1681	1715	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.41	1.00		0.68	0.73	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	760	1841		1196	1298	1583	1770	2787	1583	1770	3433	1583
Peak-hour factor, PHF	0.59	0.59	0.59	0.87	0.87	0.87	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	14	117	10	528	122	422	266	312	19	35	169	234
RTOR Reduction (vph)	0	4	0	0	0	285	0	0	11	0	0	184
Lane Group Flow (vph)	14	123	0	317	333	137	266	312	8	35	169	50
Turn Type	Perm			Perm		Perm		custom	custom	Prot		Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4			2			6
Actuated Green, G (s)	18.7	18.7		18.7	18.7	18.7	13.5	24.8	24.8	1.1	12.4	12.4
Effective Green, g (s)	18.7	18.7		18.7	18.7	18.7	13.5	24.8	24.8	1.1	12.4	12.4
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.23	0.43	0.43	0.02	0.21	0.21
Clearance Time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	4.8	4.8	2.0	4.8	4.8
Lane Grp Cap (vph)	246	596		387	420	512	413	1196	679	34	736	340
v/s Ratio Prot		0.07					c0.15	c0.11		0.02	0.05	
v/s Ratio Perm	0.02			c0.27	0.26	0.09			0.01			0.03
v/c Ratio	0.06	0.21		0.82	0.79	0.27	0.64	0.26	0.01	1.03	0.23	0.15
Uniform Delay, d1	13.5	14.2		18.0	17.8	14.5	20.0	10.6	9.5	28.3	18.8	18.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2		13.0	10.1	0.3	3.4	0.2	0.0	163.4	0.3	0.4
Delay (s)	13.6	14.3		31.0	27.9	14.8	23.4	10.8	9.5	191.7	19.1	18.8
Level of Service	B	B		C	C	B	C	B	A	F	B	B
Approach Delay (s)		14.3			23.7		16.4				32.7	
Approach LOS		B			C		B				C	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	8.6
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
46: E Divisadero St & Fresno St.

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	4	117	10	266	23	196	323	238	8	8	318	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.88	1.00	1.00	0.97	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	1841		1681	1698	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.60	1.00		0.66	0.66	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1111	1841		1170	1165	1583	1770	2787	1583	1770	3433	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	5	139	12	313	27	231	351	259	9	10	383	606
RTOR Reduction (vph)	0	5	0	0	0	180	0	0	4	0	0	272
Lane Group Flow (vph)	5	146	0	166	174	51	351	259	5	10	383	334
Turn Type	Perm			Perm		Perm		custom	custom	Prot		Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4			2			6
Actuated Green, G (s)	14.2	14.2		14.2	14.2	14.2	16.2	36.0	36.0	0.3	20.1	20.1
Effective Green, g (s)	14.2	14.2		14.2	14.2	14.2	16.2	36.0	36.0	0.3	20.1	20.1
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.25	0.57	0.57	0.00	0.32	0.32
Clearance Time (s)	4.6	4.6		4.6	4.6	4.6	4.0	4.6	4.6	4.0	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	4.8	4.8	2.0	4.8	4.8
Lane Grp Cap (vph)	248	410		261	260	353	450	1575	895	8	1083	500
v/s Ratio Prot		0.08					c0.20	0.09		0.01	0.11	
v/s Ratio Perm	0.00			0.14	c0.15	0.03			0.00			c0.21
v/c Ratio	0.02	0.36		0.64	0.67	0.15	0.78	0.16	0.01	1.25	0.35	0.67
Uniform Delay, d1	19.3	20.9		22.4	22.6	19.9	22.1	6.6	6.0	31.7	16.8	18.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.5		5.2	6.7	0.2	8.5	0.1	0.0	416.4	0.4	4.3
Delay (s)	19.4	21.4		27.6	29.3	20.1	30.6	6.7	6.0	448.1	17.2	23.2
Level of Service	B	C		C	C	C	C	A	A	F	B	C
Approach Delay (s)		21.4			25.1		20.3				25.1	
Approach LOS		C			C		C				C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	13.2
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	7	134	110	599	84	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	1.00	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1863	1583	1273	1863	1863	1583
Peak-hour factor, PHF	0.94	0.94	0.65	0.65	0.74	0.74
Adj. Flow (vph)	7	143	169	922	114	20
RTOR Reduction (vph)	0	143	0	0	0	5
Lane Group Flow (vph)	7	0	169	922	114	15
Turn Type		NA	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	3.4	0.0	42.7	42.7	42.7	42.7
Effective Green, g (s)	3.4	0.0	42.7	42.7	42.7	42.7
Actuated g/C Ratio	0.06	0.00	0.77	0.77	0.77	0.77
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	115	0	987	1444	1444	1227
v/s Ratio Prot				c0.49	0.06	
v/s Ratio Perm	c0.00		0.13			0.01
v/c Ratio	0.06	0.00	0.17	0.64	0.08	0.01
Uniform Delay, d1	24.3	27.6	1.6	2.8	1.5	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	0.0	0.7	0.0	0.0
Delay (s)	24.4	27.6	1.6	3.5	1.5	1.4
Level of Service	C	C	A	A	A	A
Approach Delay (s)	27.4			3.2	1.5	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	9	105	103	387	277	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	1.00	1.00	0.55	1.00	1.00	1.00
Satd. Flow (perm)	1863	1583	1022	1863	1863	1583
Peak-hour factor, PHF	0.61	0.61	0.76	0.76	0.78	0.78
Adj. Flow (vph)	15	172	136	509	355	28
RTOR Reduction (vph)	0	172	0	0	0	6
Lane Group Flow (vph)	15	0	136	509	355	22
Turn Type		NA	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	3.4	0.0	42.7	42.7	42.7	42.7
Effective Green, g (s)	3.4	0.0	42.7	42.7	42.7	42.7
Actuated g/C Ratio	0.06	0.00	0.77	0.77	0.77	0.77
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	115	0	792	1444	1444	1227
v/s Ratio Prot				c0.27	0.19	
v/s Ratio Perm	c0.01		0.13			0.01
v/c Ratio	0.13	0.00	0.17	0.35	0.25	0.02
Uniform Delay, d1	24.5	27.6	1.6	1.9	1.7	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.0	0.1	0.0	0.0
Delay (s)	24.6	27.6	1.6	2.0	1.8	1.4
Level of Service	C	C	A	A	A	A
Approach Delay (s)	27.3			1.9	1.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	31	100	0	0	164	8	461	310	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.91				
Frt		1.00			0.99			0.99				
Flt Protected		0.99			1.00			0.97				
Satd. Flow (prot)		3498			3515			4913				
Flt Permitted		0.85			1.00			0.97				
Satd. Flow (perm)		3019			3515			4913				
Peak-hour factor, PHF	0.78	0.78	0.78	0.88	0.88	0.88	0.82	0.82	0.82	0.92	0.92	0.92
Adj. Flow (vph)	40	128	0	0	186	9	562	378	41	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	168	0	0	188	0	0	973	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		8			4		2	2				
Permitted Phases	8											
Actuated Green, G (s)		13.8			13.8			26.4				
Effective Green, g (s)		13.8			13.8			26.4				
Actuated g/C Ratio		0.27			0.27			0.53				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		830			966			2584				
v/s Ratio Prot					0.05			c0.20				
v/s Ratio Perm		c0.06										
v/c Ratio		0.20			0.20			0.38				
Uniform Delay, d1		14.0			13.9			7.0				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.0			0.0			0.0				
Delay (s)		14.0			14.0			7.1				
Level of Service		B			B			A				
Approach Delay (s)		14.0			14.0			7.1			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
48: E St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	32	156	0	0	134	2	255	148	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.91				
Frt		1.00			1.00			0.99				
Flt Protected		0.99			1.00			0.97				
Satd. Flow (prot)		3509			3530			4902				
Flt Permitted		0.89			1.00			0.97				
Satd. Flow (perm)		3138			3530			4902				
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	38	184	0	0	174	3	287	166	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	222	0	0	175	0	0	465	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		8			4		2	2				
Permitted Phases	8											
Actuated Green, G (s)		19.0			19.0			25.0				
Effective Green, g (s)		19.0			19.0			25.0				
Actuated g/C Ratio		0.35			0.35			0.46				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1104			1242			2269				
v/s Ratio Prot					0.05			c0.09				
v/s Ratio Perm		c0.07										
v/c Ratio		0.20			0.14			0.21				
Uniform Delay, d1		12.2			11.9			8.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.0			0.0			0.0				
Delay (s)		12.2			12.0			8.6				
Level of Service		B			B			A				
Approach Delay (s)		12.2			12.0			8.6			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	392	148	0	0	13	8	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.2	4.2						
Lane Util. Factor	1.00	1.00			1.00	1.00						
Frt	1.00	1.00			1.00	0.85						
Flt Protected	0.95	1.00			1.00	1.00						
Satd. Flow (prot)	1770	1863			1863	1583						
Flt Permitted	0.95	1.00			1.00	1.00						
Satd. Flow (perm)	1770	1863			1863	1583						
Peak-hour factor, PHF	0.80	0.80	0.80	0.75	0.75	0.75	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	490	185	0	0	17	11	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	0	0	0	0
Lane Group Flow (vph)	490	185	0	0	17	0	0	0	0	0	0	0
Turn Type	Split			Split		Perm	Perm		Perm	Perm		
Protected Phases	2	2		1	1			8			8	
Permitted Phases						1	8		8	8		
Actuated Green, G (s)	16.4	16.4			0.9	0.9						
Effective Green, g (s)	16.4	16.4			0.9	0.9						
Actuated g/C Ratio	0.63	0.63			0.03	0.03						
Clearance Time (s)	4.6	4.6			4.2	4.2						
Vehicle Extension (s)	3.8	3.8			2.0	2.0						
Lane Grp Cap (vph)	1112	1171			64	55						
v/s Ratio Prot	c0.28	0.10			c0.01							
v/s Ratio Perm						0.00						
v/c Ratio	0.44	0.16			0.27	0.01						
Uniform Delay, d1	2.5	2.0			12.3	12.2						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.4	0.1			0.8	0.0						
Delay (s)	2.9	2.1			13.1	12.2						
Level of Service	A	A			B	B						
Approach Delay (s)		2.6			12.7			0.0			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	26.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	213	58	0	0	62	37	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.2	4.2						
Lane Util. Factor	1.00	1.00			1.00	1.00						
Frt	1.00	1.00			1.00	0.85						
Flt Protected	0.95	1.00			1.00	1.00						
Satd. Flow (prot)	1770	1863			1863	1583						
Flt Permitted	0.95	1.00			1.00	1.00						
Satd. Flow (perm)	1770	1863			1863	1583						
Peak-hour factor, PHF	0.85	0.85	0.85	0.52	0.52	0.52	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	251	68	0	0	119	71	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	0	0	0	0	0
Lane Group Flow (vph)	251	68	0	0	119	17	0	0	0	0	0	0
Turn Type	Split			Split		Perm	Perm		Perm	Perm		
Protected Phases	2	2		1	1			8			8	
Permitted Phases						1	8		8	8		
Actuated Green, G (s)	8.2	8.2			5.5	5.5						
Effective Green, g (s)	8.2	8.2			5.5	5.5						
Actuated g/C Ratio	0.36	0.36			0.24	0.24						
Clearance Time (s)	4.6	4.6			4.2	4.2						
Vehicle Extension (s)	3.8	3.8			2.0	2.0						
Lane Grp Cap (vph)	645	679			455	387						
v/s Ratio Prot	c0.14	0.04			c0.06							
v/s Ratio Perm						0.01						
v/c Ratio	0.39	0.10			0.26	0.04						
Uniform Delay, d1	5.3	4.7			6.9	6.5						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.5	0.1			0.1	0.0						
Delay (s)	5.8	4.8			7.0	6.5						
Level of Service	A	A			A	A						
Approach Delay (s)		5.6			6.8			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	22.5	Sum of lost time (s)	8.8
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
50: Van Ness Ave & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	157	305	0	0	308	44	42	287	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.96				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1828		1770	1790				
Flt Permitted	0.45	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	840	1863			1828		1770	1790				
Peak-hour factor, PHF	0.87	0.87	0.87	0.91	0.91	0.91	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	180	351	0	0	338	48	49	338	120	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	18	0	0	0	0
Lane Group Flow (vph)	180	351	0	0	378	0	49	440	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	27.0	27.0			27.0		22.3	22.3				
Effective Green, g (s)	27.0	27.0			27.0		22.3	22.3				
Actuated g/C Ratio	0.47	0.47			0.47		0.39	0.39				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	393	872			855		684	692				
v/s Ratio Prot		0.19			0.21		0.03	c0.25				
v/s Ratio Perm	c0.21											
v/c Ratio	0.46	0.40			0.44		0.07	0.64				
Uniform Delay, d1	10.4	10.1			10.3		11.2	14.4				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	0.3	0.1			0.1		0.0	1.4				
Delay (s)	10.7	10.2			10.4		11.2	15.8				
Level of Service	B	B			B		B	B				
Approach Delay (s)		10.4			10.4			15.4			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	8.4
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	83	149	0	0	573	42	44	189	79	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.99		1.00	0.96				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1844		1770	1780				
Flt Permitted	0.18	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	331	1863			1844		1770	1780				
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.76	0.76	0.76	0.92	0.92	0.92
Adj. Flow (vph)	95	171	0	0	666	49	58	249	104	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	21	0	0	0	0
Lane Group Flow (vph)	95	171	0	0	711	0	58	332	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	29.0	29.0			29.0		22.1	22.1				
Effective Green, g (s)	29.0	29.0			29.0		22.1	22.1				
Actuated g/C Ratio	0.49	0.49			0.49		0.37	0.37				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	161	908			899		657	661				
v/s Ratio Prot		0.09			c0.39		0.03	c0.19				
v/s Ratio Perm	0.29											
v/c Ratio	0.59	0.19			0.79		0.09	0.50				
Uniform Delay, d1	11.0	8.6			12.7		12.2	14.4				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	3.8	0.0			4.5		0.0	0.2				
Delay (s)	14.8	8.6			17.2		12.2	14.7				
Level of Service	B	A			B		B	B				
Approach Delay (s)		10.8			17.2			14.3			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	0	42	246	92	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2			
Lane Util. Factor		1.00	0.95			
Frt		0.86	0.96			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3395			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3395			
Peak-hour factor, PHF	0.81	0.81	0.86	0.86	0.92	0.92
Adj. Flow (vph)	0	52	286	107	0	0
RTOR Reduction (vph)	0	43	56	0	0	0
Lane Group Flow (vph)	0	9	337	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		4.0	11.5			
Effective Green, g (s)		4.0	11.5			
Actuated g/C Ratio		0.17	0.48			
Clearance Time (s)		4.2	4.2			
Vehicle Extension (s)		0.2	6.0			
Lane Grp Cap (vph)		270	1634			
v/s Ratio Prot			c0.10			
v/s Ratio Perm		c0.01				
v/c Ratio		0.03	0.21			
Uniform Delay, d1		8.3	3.6			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.2			
Delay (s)		8.3	3.7			
Level of Service		A	A			
Approach Delay (s)	8.3		3.7			0.0
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	23.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	0	112	387	49	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2			
Lane Util. Factor		1.00	0.95			
Frt		0.86	0.98			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3480			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3480			
Peak-hour factor, PHF	0.85	0.85	0.69	0.69	0.92	0.92
Adj. Flow (vph)	0	132	561	71	0	0
RTOR Reduction (vph)	0	117	13	0	0	0
Lane Group Flow (vph)	0	15	619	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		3.1	15.8			
Effective Green, g (s)		3.1	15.8			
Actuated g/C Ratio		0.11	0.58			
Clearance Time (s)		4.2	4.2			
Vehicle Extension (s)		0.2	6.0			
Lane Grp Cap (vph)		183	2014			
v/s Ratio Prot			c0.18			
v/s Ratio Perm		c0.01				
v/c Ratio		0.08	0.31			
Uniform Delay, d1		10.8	2.9			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.1	0.2			
Delay (s)		10.9	3.2			
Level of Service		B	A			
Approach Delay (s)	10.9		3.2			0.0
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	27.3	Sum of lost time (s)	8.4
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	117	124	18	262	330	0	0	0	25	227	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4			5.4					4.0	5.4	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frt		0.92			0.92					1.00	0.96	
Flt Protected		1.00			1.00					0.95	1.00	
Satd. Flow (prot)		3265			3247					1770	3402	
Flt Permitted		1.00			0.93					0.95	1.00	
Satd. Flow (perm)		3265			3031					1770	3402	
Peak-hour factor, PHF	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	139	148	21	305	384	0	0	0	27	244	85
RTOR Reduction (vph)	0	112	0	0	276	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	175	0	0	434	0	0	0	0	27	274	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		6.3			6.3					1.4	9.1	
Effective Green, g (s)		6.3			6.3					1.4	9.1	
Actuated g/C Ratio		0.24			0.24					0.05	0.35	
Clearance Time (s)		5.4			5.4					4.0	5.4	
Vehicle Extension (s)		0.2			0.2					3.0	0.2	
Lane Grp Cap (vph)		785			729					95	1182	
v/s Ratio Prot		0.05								0.02	c0.08	
v/s Ratio Perm					c0.14							
v/c Ratio		0.22			0.60					0.28	0.23	
Uniform Delay, d1		8.0			8.8					11.9	6.1	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		0.1			0.9					1.6	0.0	
Delay (s)		8.0			9.7					13.6	6.1	
Level of Service		A			A					B	A	
Approach Delay (s)		8.0			9.7			0.0			6.7	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	26.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: E St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	141	337	42	159	176	0	0	0	39	724	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4			5.4					5.4	5.4	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frt		0.89			0.93					1.00	0.98	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3165			3273					1770	3484	
Flt Permitted		1.00			0.75					0.95	1.00	
Satd. Flow (perm)		3165			2452					1770	3484	
Peak-hour factor, PHF	0.78	0.78	0.78	0.85	0.85	0.85	0.92	0.92	0.92	0.74	0.74	0.74
Adj. Flow (vph)	0	181	432	49	187	207	0	0	0	53	978	114
RTOR Reduction (vph)	0	150	0	0	161	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	463	0	0	282	0	0	0	0	53	1081	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		9.3			9.3					3.5	21.4	
Effective Green, g (s)		9.3			9.3					3.5	21.4	
Actuated g/C Ratio		0.22			0.22					0.08	0.52	
Clearance Time (s)		5.4			5.4					5.4	5.4	
Vehicle Extension (s)		0.2			0.2					0.2	0.2	
Lane Grp Cap (vph)		709			549					149	1797	
v/s Ratio Prot		c0.15								0.03	c0.31	
v/s Ratio Perm					0.12							
v/c Ratio		0.65			0.51					0.36	0.60	
Uniform Delay, d1		14.6			14.1					17.9	7.1	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		1.7			0.3					0.5	0.4	
Delay (s)		16.3			14.5					18.5	7.4	
Level of Service		B			B					B	A	
Approach Delay (s)		16.3			14.5			0.0			8.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	41.5	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	112	44	5	37	0	52	314	335	115	237	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1784		1770	1863		1770	1863	1583	1770	1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1784		1770	1863		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.58	0.58	0.58	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	132	52	9	64	0	57	341	364	120	247	3
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	201	0	0	2
Lane Group Flow (vph)	0	165	0	9	64	0	57	341	164	120	247	1
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)		19.0		0.7	23.7		2.4	32.7	32.7	4.0	34.3	34.3
Effective Green, g (s)		19.0		0.7	23.7		2.4	32.7	32.7	4.0	34.3	34.3
Actuated g/C Ratio		0.26		0.01	0.33		0.03	0.45	0.45	0.05	0.47	0.47
Clearance Time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.0	4.2	4.2
Vehicle Extension (s)		0.2		3.0	0.2		3.0	0.2	0.2	3.0	0.2	0.2
Lane Grp Cap (vph)		466		17	606		58	837	711	97	878	746
v/s Ratio Prot		c0.09		c0.01	0.03		0.03	c0.18		c0.07	0.13	
v/s Ratio Perm									0.10			0.00
v/c Ratio		0.35		0.53	0.11		0.98	0.41	0.23	1.24	0.28	0.00
Uniform Delay, d1		21.9		35.9	17.1		35.2	13.5	12.3	34.4	11.7	10.2
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2		26.7	0.0		111.4	0.1	0.1	168.1	0.1	0.0
Delay (s)		22.1		62.5	17.2		146.6	13.6	12.4	202.5	11.8	10.2
Level of Service		C		E	B		F	B	B	F	B	B
Approach Delay (s)		22.1			22.8			23.0			73.6	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.4
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
53: Broadway St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	44	76	75	46	0	29	172	179	30	533	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.2	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.90		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1685		1770	1863		1770	1863	1583	1770	1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1685		1770	1863		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.69	0.69	0.69	0.92	0.92	0.92	0.78	0.78	0.78
Adj. Flow (vph)	0	48	84	109	67	0	32	187	195	38	683	46
RTOR Reduction (vph)	0	62	0	0	0	0	0	0	124	0	0	9
Lane Group Flow (vph)	0	70	0	109	67	0	32	187	71	38	683	37
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)		14.5		11.1	29.6		3.0	33.0	33.0	15.7	45.9	45.9
Effective Green, g (s)		14.5		11.1	29.6		3.0	33.0	33.0	15.7	45.9	45.9
Actuated g/C Ratio		0.16		0.12	0.33		0.03	0.36	0.36	0.17	0.50	0.50
Clearance Time (s)		4.2		4.0	4.2		4.0	4.2	4.2	4.2	4.2	4.2
Vehicle Extension (s)		0.2		3.0	0.2		3.0	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)		269		216	607		58	676	575	306	941	799
v/s Ratio Prot		c0.04		c0.06	0.04		c0.02	0.10		0.02	c0.37	
v/s Ratio Perm									0.04			0.02
v/c Ratio		0.26		0.50	0.11		0.55	0.28	0.12	0.12	0.73	0.05
Uniform Delay, d1		33.5		37.3	21.4		43.3	20.5	19.3	31.8	17.6	11.4
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2		1.9	0.0		10.9	0.1	0.0	0.1	2.4	0.0
Delay (s)		33.7		39.2	21.5		54.2	20.6	19.3	31.9	20.0	11.4
Level of Service		C		D	C		D	C	B	C	B	B
Approach Delay (s)		33.7			32.4			22.6			20.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	16.4
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	166	5	76	272	0	0	0	139	157	194	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		1.00		1.00	1.00			0.85		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1855		1770	1863			1583		1770	1853	
Flt Permitted		1.00		0.57	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1855		1059	1863			1583		1770	1853	
Peak-hour factor, PHF	0.86	0.86	0.86	0.93	0.93	0.93	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	193	6	82	292	0	0	0	151	194	240	9
RTOR Reduction (vph)	0	1	0	0	0	0	0	112	0	0	1	0
Lane Group Flow (vph)	0	198	0	82	292	0	0	39	0	194	248	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		28.0		28.0	28.0			22.0		22.0	48.2	
Effective Green, g (s)		28.0		28.0	28.0			22.0		22.0	48.2	
Actuated g/C Ratio		0.33		0.33	0.33			0.26		0.26	0.57	
Clearance Time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Vehicle Extension (s)		0.2		0.2	0.2			0.2		0.2	0.2	
Lane Grp Cap (vph)		614		350	617			412		460	1056	
v/s Ratio Prot		0.11			c0.16			0.02		c0.11	c0.13	
v/s Ratio Perm				0.08								
v/c Ratio		0.32		0.23	0.47			0.10		0.42	0.23	
Uniform Delay, d1		21.2		20.5	22.4			23.7		26.0	9.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.1	0.2			0.0		0.2	0.0	
Delay (s)		21.3		20.7	22.7			23.8		26.2	9.1	
Level of Service		C		C	C			C		C	A	
Approach Delay (s)		21.3			22.2			23.8			16.6	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	5	121	498	0	0	0	74	83	409	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.99		1.00	1.00			0.85		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1848		1770	1863			1583		1770	1839	
Flt Permitted		1.00		0.70	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1848		1305	1863			1583		1770	1839	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	0	82	5	149	615	0	0	0	80	104	511	48
RTOR Reduction (vph)	0	3	0	0	0	0	0	58	0	0	4	0
Lane Group Flow (vph)	0	84	0	149	615	0	0	22	0	104	555	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		28.9		28.9	28.9			22.5		16.5	43.2	
Effective Green, g (s)		28.9		28.9	28.9			22.5		16.5	43.2	
Actuated g/C Ratio		0.36		0.36	0.36			0.28		0.20	0.54	
Clearance Time (s)		4.2		4.2	4.2			4.2		4.2	4.2	
Vehicle Extension (s)		0.2		0.2	0.2			0.2		0.2	0.2	
Lane Grp Cap (vph)		663		469	669			442		363	987	
v/s Ratio Prot		0.05			c0.33			0.01		0.06	c0.30	
v/s Ratio Perm				0.11								
v/c Ratio		0.13		0.32	0.92			0.05		0.29	0.56	
Uniform Delay, d1		17.3		18.7	24.7			21.2		27.0	12.4	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.1	17.4			0.0		0.2	0.4	
Delay (s)		17.4		18.8	42.1			21.2		27.2	12.8	
Level of Service		B		B	D			C		C	B	
Approach Delay (s)		17.4			37.5			21.2			15.1	
Approach LOS		B			D			C			B	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	167	659	2	0	9	23	47	0	97	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.9	4.9		4.2			4.0		4.6	4.6
Lane Util. Factor	1.00	0.88		1.00			1.00		1.00	1.00
Frt	1.00	0.85		0.86			1.00		1.00	1.00
Flt Protected	0.95	1.00		1.00			0.98		0.95	1.00
Satd. Flow (prot)	1770	2787		1611			1832		1770	1863
Flt Permitted	0.95	1.00		1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787		1611			1832		1410	1863
Peak-hour factor, PHF	0.73	0.73	0.73	0.45	0.45	0.63	0.63	0.92	0.65	0.65
Adj. Flow (vph)	229	903	3	0	20	37	75	0	149	157
RTOR Reduction (vph)	0	0	0	20	0	0	0	0	0	0
Lane Group Flow (vph)	229	906	0	0	0	0	112	0	149	157
Turn Type		Prot				Split			Perm	
Protected Phases	2	2		3		1	1	4		4
Permitted Phases									4	
Actuated Green, G (s)	20.5	20.5		1.0			6.1		11.5	11.5
Effective Green, g (s)	20.5	20.5		1.0			6.1		11.5	11.5
Actuated g/C Ratio	0.36	0.36		0.02			0.11		0.20	0.20
Clearance Time (s)	4.9	4.9		4.2			4.0		4.6	4.6
Vehicle Extension (s)	4.0	4.0		2.0			2.0		4.0	4.0
Lane Grp Cap (vph)	639	1006		28			197		285	377
v/s Ratio Prot	0.13	c0.33		c0.00			c0.06			0.08
v/s Ratio Perm									c0.11	
v/c Ratio	0.36	0.90		0.01			0.57		0.52	0.42
Uniform Delay, d1	13.3	17.2		27.4			24.1		20.2	19.7
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.5	11.2		0.1			2.2		2.2	1.0
Delay (s)	13.8	28.3		27.5			26.3		22.4	20.7
Level of Service	B	C		C			C		C	C
Approach Delay (s)	25.4			27.5			26.3	0.0		21.6
Approach LOS	C			C			C	A		C

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	17.7
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations									
Volume (vph)	89	291	0	9	15	26	0	70	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.9	4.9	4.6			4.0		4.6	4.6
Lane Util. Factor	1.00	0.88	1.00			1.00		1.00	1.00
Frt	1.00	0.85	0.86			1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00			0.98		0.95	1.00
Satd. Flow (prot)	1770	2787	1611			1830		1770	1863
Flt Permitted	0.95	1.00	1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787	1611			1830		1410	1863
Peak-hour factor, PHF	0.86	0.86	0.63	0.63	0.51	0.51	0.92	0.64	0.64
Adj. Flow (vph)	103	338	0	14	29	51	0	109	184
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	103	338	0	0	0	80	0	109	184
Turn Type		Prot			Split			Perm	
Protected Phases	2	2	3		1	1	4		4
Permitted Phases								4	
Actuated Green, G (s)	12.4	12.4	1.0			6.2		10.8	10.8
Effective Green, g (s)	12.4	12.4	1.0			6.2		10.8	10.8
Actuated g/C Ratio	0.26	0.26	0.02			0.13		0.22	0.22
Clearance Time (s)	4.9	4.9	4.6			4.0		4.6	4.6
Vehicle Extension (s)	4.0	4.0	4.0			2.0		4.0	4.0
Lane Grp Cap (vph)	453	713	33			234		314	415
v/s Ratio Prot	0.06	c0.12	c0.00			c0.04			c0.10
v/s Ratio Perm								0.08	
v/c Ratio	0.23	0.47	0.01			0.34		0.35	0.44
Uniform Delay, d1	14.3	15.3	23.3			19.3		15.9	16.3
Progression Factor	1.00	1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	0.7	0.1			0.3		0.9	1.0
Delay (s)	14.6	16.0	23.4			19.6		16.8	17.3
Level of Service	B	B	C			B		B	B
Approach Delay (s)	15.7		23.4			19.6	0.0		17.1
Approach LOS	B		C			B	A		B

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	18.1
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	NEL
Right Turn Channelized											
Volume (veh/h)	108	299	17	72	94	50	110	36	246	11	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	325	18	78	102	54	120	39	267	12	0
Approach Volume (veh/h)		461			235				438		0
Crossing Volume (veh/h)		198			543				442		442
High Capacity (veh/h)		1186			902				977		977
High v/c (veh/h)		0.39			0.26				0.45		0.00
Low Capacity (veh/h)		981			726				793		793
Low v/c (veh/h)		0.47			0.32				0.55		0.00

Intersection Summary			
Maximum v/c High	0.45		
Maximum v/c Low	0.55		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis
56: Divisadero St & P St

4/9/2012

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	NEL
Right Turn Channelized											
Volume (veh/h)	220	249	7	68	159	110	104	117	729	13	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	239	271	8	74	173	120	113	127	792	14	0
Approach Volume (veh/h)		517			366				1047		0
Crossing Volume (veh/h)		187			1272#				510		510
High Capacity (veh/h)		1196			497				926		926
High v/c (veh/h)		0.43			0.74				1.13		0.00
Low Capacity (veh/h)		990			376				748		748
Low v/c (veh/h)		0.52			0.97				1.40		0.00

Intersection Summary			
Maximum v/c High	1.13		
Maximum v/c Low	1.40		
Intersection Capacity Utilization	81.5%	ICU Level of Service	D

Crossing flow exceeds 1200, method is not applicable

HCM Signalized Intersection Capacity Analysis
57: E Divisadero St & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑					↰	↑↑	↱
Volume (vph)	0	361	31	0	130	0	0	0	0	65	795	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5					4.9	4.9	4.9
Lane Util. Factor		0.95			0.95					1.00	0.95	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3497			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3497			3539					1770	3539	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	430	37	0	151	0	0	0	0	84	1032	144
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	0	455	0	0	151	0	0	0	0	84	1032	77
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		25.5			25.5					20.1	20.1	20.1
Effective Green, g (s)		25.5			25.5					20.1	20.1	20.1
Actuated g/C Ratio		0.46			0.46					0.37	0.37	0.37
Clearance Time (s)		4.5			4.5					4.9	4.9	4.9
Vehicle Extension (s)		5.0			5.0					5.0	5.0	5.0
Lane Grp Cap (vph)		1621			1641					647	1293	579
v/s Ratio Prot		c0.13			0.04					0.05	c0.29	
v/s Ratio Perm												0.05
v/c Ratio		0.28			0.09					0.13	0.80	0.13
Uniform Delay, d1		9.1			8.3					11.6	15.6	11.6
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.1					0.2	4.1	0.2
Delay (s)		9.3			8.3					11.8	19.7	11.9
Level of Service		A			A					B	B	B
Approach Delay (s)		9.3			8.3			0.0			18.3	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
57: E Divisadero St & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	379	16	0	276	0	0	0	0	92	357	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5					4.9	4.9	4.9
Lane Util. Factor		0.95			0.95					1.00	0.95	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3518			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3518			3539					1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	436	18	0	325	0	0	0	0	107	415	91
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	0	449	0	0	325	0	0	0	0	107	415	33
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		25.5			25.5					20.1	20.1	20.1
Effective Green, g (s)		25.5			25.5					20.1	20.1	20.1
Actuated g/C Ratio		0.46			0.46					0.37	0.37	0.37
Clearance Time (s)		4.5			4.5					4.9	4.9	4.9
Vehicle Extension (s)		5.0			5.0					5.0	5.0	5.0
Lane Grp Cap (vph)		1631			1641					647	1293	579
v/s Ratio Prot		c0.13			0.09					0.06	c0.12	
v/s Ratio Perm												0.02
v/c Ratio		0.28			0.20					0.17	0.32	0.06
Uniform Delay, d1		9.1			8.7					11.8	12.5	11.3
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.1					0.3	0.3	0.1
Delay (s)		9.3			8.8					12.0	12.8	11.4
Level of Service		A			A					B	B	B
Approach Delay (s)		9.3			8.8			0.0			12.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
58: H St & San Joaquin St

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	745	68	3	5	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.64	0.64	0.75	0.75	0.50	0.50
Hourly flow rate (vph)	8	1164	91	4	10	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	95				1272	93
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	95				1272	93
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	99
cM capacity (veh/h)	1499				184	965

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1172	95	16
Volume Left	8	0	10
Volume Right	0	4	6
cSH	1499	1700	264
Volume to Capacity	0.01	0.06	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.2	0.0	19.5
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	19.5
Approach LOS			C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
58: H St & San Joaquin St

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	3	362	366	4	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.71	0.71	0.33	0.33
Hourly flow rate (vph)	3	402	515	6	6	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	521				927	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	521				927	518
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1045				297	557

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	406	521	12
Volume Left	3	0	6
Volume Right	0	6	6
cSH	1045	1700	387
Volume to Capacity	0.00	0.31	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.1	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	14.6
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	294	126	7	168	15	2	11	14	13	58	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.92		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3534	1583		3492		1770	1704		1770	1812	
Flt Permitted		0.95	1.00		0.94		0.69	1.00		0.74	1.00	
Satd. Flow (perm)		3348	1583		3284		1285	1704		1374	1812	
Peak-hour factor, PHF	0.64	0.64	0.64	0.91	0.91	0.91	0.84	0.84	0.84	0.68	0.68	0.68
Adj. Flow (vph)	14	459	200	8	185	16	2	13	17	19	85	19
RTOR Reduction (vph)	0	0	87	0	7	0	0	13	0	0	14	0
Lane Group Flow (vph)	0	473	113	0	202	0	2	17	0	19	90	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		31.9	31.9		31.9		13.7	13.7		13.7	13.7	
Effective Green, g (s)		31.9	31.9		31.9		13.7	13.7		13.7	13.7	
Actuated g/C Ratio		0.57	0.57		0.57		0.24	0.24		0.24	0.24	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1894	895		1857		312	414		334	440	
v/s Ratio Prot								0.01			c0.05	
v/s Ratio Perm		c0.14	0.07		0.06		0.00			0.01		
v/c Ratio		0.25	0.13		0.11		0.01	0.04		0.06	0.20	
Uniform Delay, d1		6.2	5.7		5.7		16.2	16.3		16.4	17.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.0	0.0		0.0	0.1	
Delay (s)		6.2	5.8		5.7		16.2	16.3		16.4	17.1	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		6.1			5.7			16.3			17.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: E Divisadero St & N San Pablo Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	231	33	5	339	30	18	20	22	15	20	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.92		1.00	0.94	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3529	1583		3494		1770	1717		1770	1742	
Flt Permitted		0.92	1.00		0.95		0.72	1.00		0.73	1.00	
Satd. Flow (perm)		3268	1583		3327		1348	1717		1357	1742	
Peak-hour factor, PHF	0.87	0.87	0.87	0.79	0.79	0.79	0.94	0.94	0.94	0.69	0.69	0.69
Adj. Flow (vph)	17	266	38	6	429	38	19	21	23	22	29	22
RTOR Reduction (vph)	0	0	15	0	8	0	0	19	0	0	18	0
Lane Group Flow (vph)	0	283	23	0	465	0	19	25	0	22	33	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2		2	2			4			4		
Actuated Green, G (s)		32.6	32.6		32.6		9.4	9.4		9.4	9.4	
Effective Green, g (s)		32.6	32.6		32.6		9.4	9.4		9.4	9.4	
Actuated g/C Ratio		0.62	0.62		0.62		0.18	0.18		0.18	0.18	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		2018	977		2054		240	306		242	310	
v/s Ratio Prot								0.01			c0.02	
v/s Ratio Perm		0.09	0.01		c0.14		0.01			0.02		
v/c Ratio		0.14	0.02		0.23		0.08	0.08		0.09	0.11	
Uniform Delay, d1		4.2	3.9		4.5		18.1	18.1		18.1	18.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.1	0.0		0.1	0.1	
Delay (s)		4.2	3.9		4.5		18.1	18.1		18.2	18.2	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		4.2			4.5			18.1			18.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
60: H St & Amador St

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	716	62	7	37	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.64	0.64	0.76	0.76	0.65	0.65
Hourly flow rate (vph)	8	1119	82	9	57	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	91				1221	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	91				1221	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				71	99
cM capacity (veh/h)	1504				198	973

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1127	91	66
Volume Left	8	0	57
Volume Right	0	9	9
cSH	1504	1700	222
Volume to Capacity	0.01	0.05	0.30
Queue Length 95th (ft)	0	0	30
Control Delay (s)	0.2	0.0	27.9
Lane LOS	A		D
Approach Delay (s)	0.2	0.0	27.9
Approach LOS			D

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
60: H St & Amador St

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	354	355	24	11	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.71	0.71	0.72	0.72
Hourly flow rate (vph)	5	389	500	34	15	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	534				917	517
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	534				917	517
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	96
cM capacity (veh/h)	1034				300	558

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	395	534	38
Volume Left	5	0	15
Volume Right	0	34	22
cSH	1034	1700	414
Volume to Capacity	0.01	0.31	0.09
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.2	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	14.6
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	43	29	182	13	4	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.0	4.9		4.9	4.9
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3504		1770	1863
Flt Permitted	1.00	1.00	1.00		0.67	1.00
Satd. Flow (perm)	1863	1583	3504		1242	1863
Peak-hour factor, PHF	0.82	0.82	0.86	0.86	0.92	0.92
Adj. Flow (vph)	52	35	212	15	4	134
RTOR Reduction (vph)	0	35	5	0	0	0
Lane Group Flow (vph)	52	0	222	0	4	134
Turn Type		NA			Perm	
Protected Phases			2			2
Permitted Phases	4				2	
Actuated Green, G (s)	1.5	0.0	6.0		6.0	6.0
Effective Green, g (s)	1.5	0.0	6.0		6.0	6.0
Actuated g/C Ratio	0.09	0.00	0.36		0.36	0.36
Clearance Time (s)	4.5		4.9		4.9	4.9
Vehicle Extension (s)	5.0		4.0		4.0	4.0
Lane Grp Cap (vph)	165	0	1244		441	661
v/s Ratio Prot			0.06			c0.07
v/s Ratio Perm	c0.03				0.00	
v/c Ratio	0.32	0.00	0.18		0.01	0.20
Uniform Delay, d1	7.2	8.4	3.8		3.5	3.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	0.0	0.1		0.0	0.2
Delay (s)	9.5	8.4	3.8		3.5	4.0
Level of Service	A	A	A		A	A
Approach Delay (s)	9.1		3.8			4.0
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	16.9	Sum of lost time (s)	9.4
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
61: E Divisadero St & G St

4/9/2012

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	62	15	124	9	16	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5		4.9		4.9	4.9
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.97		0.99		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1744		3504		1770	1863
Flt Permitted	0.95		1.00		0.68	1.00
Satd. Flow (perm)	1729		3504		1263	1863
Peak-hour factor, PHF	0.77	0.77	0.88	0.88	0.90	0.90
Adj. Flow (vph)	81	19	141	10	18	158
RTOR Reduction (vph)	15	0	6	0	0	0
Lane Group Flow (vph)	85	0	145	0	18	158
Turn Type					Perm	
Protected Phases			2			2
Permitted Phases	4				2	
Actuated Green, G (s)	3.8		5.9		5.9	5.9
Effective Green, g (s)	3.8		5.9		5.9	5.9
Actuated g/C Ratio	0.20		0.31		0.31	0.31
Clearance Time (s)	4.5		4.9		4.9	4.9
Vehicle Extension (s)	5.0		4.0		4.0	4.0
Lane Grp Cap (vph)	344		1082		390	575
v/s Ratio Prot			0.04			c0.08
v/s Ratio Perm	c0.05				0.01	
v/c Ratio	0.25		0.13		0.05	0.27
Uniform Delay, d1	6.4		4.8		4.6	5.0
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.8		0.1		0.1	0.4
Delay (s)	7.2		4.8		4.7	5.3
Level of Service	A		A		A	A
Approach Delay (s)	7.2		4.8			5.3
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	19.1	Sum of lost time (s)	9.4
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
63: E Divisadero St & N Echo St

4/9/2012

Movement	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL
Lane Configurations												
Volume (vph)	21	4	4	10	241	1	9	65	0	9	3	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6	4.6				4.6	4.6	4.2	4.6
Lane Util. Factor	1.00			0.95	0.95				0.95	1.00	1.00	0.97
Frt	0.98			0.87	0.85				1.00	0.85	0.86	0.91
Flt Protected	1.00			1.00	1.00				0.95	1.00	1.00	0.98
Satd. Flow (prot)	1821			1531	1504				3362	1583	1611	3221
Flt Permitted	1.00			0.99	1.00				0.95	1.00	1.00	0.46
Satd. Flow (perm)	1821			1525	1504				3362	1583	1611	1494
Peak-hour factor, PHF	0.84	0.84	0.83	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.75	0.71
Adj. Flow (vph)	25	5	5	12	290	1	10	76	0	10	4	625
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	0	9	4	0
Lane Group Flow (vph)	27	0	0	156	152	0	0	0	86	1	0	1594
Turn Type			Perm		Perm		Perm	Perm		Perm	custom	
Protected Phases	6			6					4		8	5
Permitted Phases			6		6		4	4		4		2
Actuated Green, G (s)	20.2			20.2	20.2				6.4	6.4	6.8	18.2
Effective Green, g (s)	20.2			20.2	20.2				6.4	6.4	6.8	18.2
Actuated g/C Ratio	0.34			0.34	0.34				0.11	0.11	0.12	0.31
Clearance Time (s)	4.6			4.6	4.6				4.6	4.6	4.2	4.6
Vehicle Extension (s)	5.0			5.0	5.0				4.0	4.0	2.0	5.0
Lane Grp Cap (vph)	628			526	518				367	173	187	1000
v/s Ratio Prot	0.01										0.00	c0.49
v/s Ratio Perm				c0.10	0.10				0.03	0.00		
v/c Ratio	0.04			0.30	0.29				0.23	0.01	0.00	1.91dr
Uniform Delay, d1	12.8			14.0	14.0				23.9	23.3	22.9	20.2
Progression Factor	1.00			1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1			0.7	0.7				0.4	0.0	0.0	272.0
Delay (s)	12.8			14.7	14.7				24.3	23.3	22.9	292.2
Level of Service	B			B	B				C	C	C	F
Approach Delay (s)	12.8			14.7					24.2			292.2
Approach LOS	B			B					C			F

Intersection Summary			
HCM Average Control Delay	232.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	13.8
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	687	1
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.71	0.71
Adj. Flow (vph)	968	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
63: E Divisadero St & N Echo St

4/9/2012

Movement	EBT	EBR	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL2	SEL
Lane Configurations												
Volume (vph)	31	9	7	511	2	4	302	0	19	6	1	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6		4.6	4.6				4.6	4.6	4.2		4.6
Lane Util. Factor	1.00		0.95	0.95				0.95	1.00	1.00		0.97
Frt	0.97		0.85	0.85				1.00	0.85	0.86		0.90
Flt Protected	1.00		1.00	1.00				0.95	1.00	1.00		0.98
Satd. Flow (prot)	1804		1511	1504				3362	1583	1611		3203
Flt Permitted	1.00		1.00	1.00				0.95	1.00	1.00		0.95
Satd. Flow (perm)	1804		1511	1504				3362	1583	1611		3112
Peak-hour factor, PHF	0.85	0.85	0.78	0.78	0.78	0.71	0.71	0.71	0.71	0.50	0.95	0.95
Adj. Flow (vph)	36	11	9	655	3	6	425	0	27	12	1	171
RTOR Reduction (vph)	8	0	0	1	0	0	0	0	23	10	0	0
Lane Group Flow (vph)	39	0	337	329	0	0	0	431	4	2	0	499
Turn Type				custom		Perm	Perm		Perm	custom	Perm	
Protected Phases	6		6	2				4		8		5
Permitted Phases				6		4	4		4		5	2
Actuated Green, G (s)	21.6		21.6	34.0				12.0	12.0	12.4		30.4
Effective Green, g (s)	21.6		21.6	34.0				12.0	12.0	12.4		30.4
Actuated g/C Ratio	0.26		0.26	0.41				0.15	0.15	0.15		0.37
Clearance Time (s)	4.6		4.6	4.6				4.6	4.6	4.2		4.6
Vehicle Extension (s)	5.0		5.0	5.0				4.0	4.0	2.0		5.0
Lane Grp Cap (vph)	473		396	621				490	231	242		1168
v/s Ratio Prot	0.02		c0.22	c0.08						0.00		c0.09
v/s Ratio Perm				0.14				0.13	0.00			0.06
v/c Ratio	0.08		0.85	0.53				1.67dl	0.02	0.01		0.43
Uniform Delay, d1	22.9		28.9	18.2				34.5	30.1	29.8		22.7
Progression Factor	1.00		1.00	1.00				1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2		17.3	1.6				16.8	0.0	0.0		0.5
Delay (s)	23.1		46.2	19.8				51.3	30.2	29.8		23.2
Level of Service	C		D	B				D	C	C		C
Approach Delay (s)	23.1		33.1					50.0				23.2
Approach LOS	C		C					D				C

Intersection Summary			
HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	18.4
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	310	1
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	326	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	17	385	67	10	245	16	36	56	14	10	24	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.97		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3532	1583		3501		1770	1805		1770	1807	
Flt Permitted		0.94	1.00		0.94		0.73	1.00		0.71	1.00	
Satd. Flow (perm)		3321	1583		3290		1362	1805		1316	1807	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.90	0.90	0.90	0.75	0.75	0.75
Adj. Flow (vph)	18	418	73	10	255	17	40	62	16	13	32	8
RTOR Reduction (vph)	0	0	38	0	9	0	0	12	0	0	6	0
Lane Group Flow (vph)	0	436	35	0	273	0	40	66	0	13	34	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4			2			2		
Actuated Green, G (s)		15.9	15.9		15.9		7.8	7.8		7.8	7.8	
Effective Green, g (s)		15.9	15.9		15.9		7.8	7.8		7.8	7.8	
Actuated g/C Ratio		0.48	0.48		0.48		0.24	0.24		0.24	0.24	
Clearance Time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1605	765		1590		323	428		312	428	
v/s Ratio Prot								c0.04			0.02	
v/s Ratio Perm		c0.13	0.02		0.08		0.03			0.01		
v/c Ratio		0.27	0.05		0.17		0.12	0.15		0.04	0.08	
Uniform Delay, d1		5.1	4.5		4.8		9.9	9.9		9.7	9.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.1	0.1		0.0	0.0	
Delay (s)		5.1	4.5		4.8		9.9	10.0		9.7	9.8	
Level of Service		A	A		A		A	A		A	A	
Approach Delay (s)		5.0			4.8			10.0			9.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	32.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
64: E Divisadero St & Broadway St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	22	225	29	5	401	54	26	22	19	81	91	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor		0.95	1.00		0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.98		1.00	0.93		1.00	0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3524	1583		3475		1770	1734		1770	1842	
Flt Permitted		0.90	1.00		0.95		0.68	1.00		0.72	1.00	
Satd. Flow (perm)		3193	1583		3312		1263	1734		1349	1842	
Peak-hour factor, PHF	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	25	259	33	5	441	59	31	27	23	101	114	9
RTOR Reduction (vph)	0	0	16	0	19	0	0	17	0	0	6	0
Lane Group Flow (vph)	0	284	17	0	486	0	31	33	0	101	117	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4			2			2		
Actuated Green, G (s)		23.3	23.3		23.3		12.7	12.7		12.7	12.7	
Effective Green, g (s)		23.3	23.3		23.3		12.7	12.7		12.7	12.7	
Actuated g/C Ratio		0.52	0.52		0.52		0.28	0.28		0.28	0.28	
Clearance Time (s)		4.6	4.6		4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)		0.2	0.2		0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		1646	816		1707		355	487		379	518	
v/s Ratio Prot								0.02			0.06	
v/s Ratio Perm		0.09	0.01		c0.15		0.02			c0.07		
v/c Ratio		0.17	0.02		0.28		0.09	0.07		0.27	0.22	
Uniform Delay, d1		5.8	5.4		6.2		12.0	11.9		12.6	12.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		0.0		0.0	0.0		0.1	0.1	
Delay (s)		5.8	5.4		6.3		12.0	11.9		12.8	12.6	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		5.8			6.3			12.0			12.6	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	45.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
65: E Divisadero St & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	472	18	8	134	0	9	0	16	255	505	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	0.95	
Frt		0.99			1.00		1.00		0.85	1.00	0.97	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3519			3529		1770		1583	1770	3420	
Flt Permitted		1.00			0.92		0.30		1.00	0.95	1.00	
Satd. Flow (perm)		3519			3260		568		1583	1770	3420	
Peak-hour factor, PHF	0.70	0.70	0.70	0.87	0.87	0.87	0.78	0.78	0.78	0.90	0.90	0.90
Adj. Flow (vph)	0	674	26	9	154	0	12	0	21	283	561	162
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	12	0	45	0
Lane Group Flow (vph)	0	695	0	0	163	0	12	0	9	283	678	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		25.0			25.0		24.2		24.2	24.2	24.2	
Effective Green, g (s)		25.0			25.0		24.2		24.2	24.2	24.2	
Actuated g/C Ratio		0.43			0.43		0.42		0.42	0.42	0.42	
Clearance Time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1512			1400		236		658	736	1422	
v/s Ratio Prot		c0.20							0.01		c0.20	
v/s Ratio Perm					0.05		0.02			0.16		
v/c Ratio		0.46			0.12		0.05		0.01	0.38	0.48	
Uniform Delay, d1		11.8			10.0		10.1		10.0	11.8	12.4	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.0		0.0		0.0	0.1	0.1	
Delay (s)		11.9			10.0		10.2		10.0	11.9	12.5	
Level of Service		B			A		B		A	B	B	
Approach Delay (s)		11.9			10.0			10.1			12.3	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
65: E Divisadero St & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	237	22	7	360	0	12	0	30	122	221	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor		0.95			0.95		1.00		1.00	1.00	0.95	
Frt		0.99			1.00		1.00		0.85	1.00	0.96	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3494			3536		1770		1583	1770	3402	
Flt Permitted		1.00			0.95		0.56		1.00	0.95	1.00	
Satd. Flow (perm)		3494			3359		1038		1583	1770	3402	
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	0	249	23	8	396	0	14	0	34	131	238	83
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	20	0	49	0
Lane Group Flow (vph)	0	261	0	0	404	0	14	0	14	131	272	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		25.0			25.0		24.0		24.0	24.0	24.0	
Effective Green, g (s)		25.0			25.0		24.0		24.0	24.0	24.0	
Actuated g/C Ratio		0.43			0.43		0.41		0.41	0.41	0.41	
Clearance Time (s)		4.5			4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)		2.0			2.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)		1506			1448		430		655	732	1408	
v/s Ratio Prot		0.07							0.01		c0.08	
v/s Ratio Perm					c0.12		0.01			0.07		
v/c Ratio		0.17			0.28		0.03		0.02	0.18	0.19	
Uniform Delay, d1		10.1			10.7		10.1		10.1	10.8	10.8	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.0		0.0	0.0	0.0	
Delay (s)		10.2			10.7		10.1		10.1	10.8	10.9	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		10.2			10.7			10.1			10.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	40	465	180	6	116	43	31	157	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.96			0.96			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3390			3395			3473				
Flt Permitted		0.92			0.93			0.99				
Satd. Flow (perm)		3142			3147			3473				
Peak-hour factor, PHF	0.69	0.69	0.69	0.81	0.81	0.81	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	58	674	261	7	143	53	33	167	16	0	0	0
RTOR Reduction (vph)	0	57	0	0	29	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	936	0	0	174	0	0	206	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		25.5			25.5			22.0				
Effective Green, g (s)		25.5			25.5			22.0				
Actuated g/C Ratio		0.45			0.45			0.39				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1426			1428			1360				
v/s Ratio Prot								c0.06				
v/s Ratio Perm		c0.30			0.06							
v/c Ratio		0.66			0.12			0.15				
Uniform Delay, d1		11.9			8.9			11.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.8			0.0			0.0				
Delay (s)		12.8			8.9			11.1				
Level of Service		B			A			B				
Approach Delay (s)		12.8			8.9			11.1			0.0	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
66: E Divisadero St & N Van Ness Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	154	221	61	9	306	105	123	537	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.98			0.96			1.00				
Flt Protected		0.98			1.00			0.99				
Satd. Flow (prot)		3405			3403			3494				
Flt Permitted		0.63			0.94			0.99				
Satd. Flow (perm)		2166			3202			3494				
Peak-hour factor, PHF	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.92	0.92	0.92
Adj. Flow (vph)	220	316	87	13	437	150	198	866	27	0	0	0
RTOR Reduction (vph)	0	21	0	0	42	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	602	0	0	558	0	0	1088	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		25.5			25.5			23.0				
Effective Green, g (s)		25.5			25.5			23.0				
Actuated g/C Ratio		0.45			0.45			0.40				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		966			1427			1405				
v/s Ratio Prot								c0.31				
v/s Ratio Perm		c0.28			0.17							
v/c Ratio		0.62			0.39			0.77				
Uniform Delay, d1		12.2			10.6			14.8				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.9			0.1			2.5				
Delay (s)		13.1			10.7			17.3				
Level of Service		B			B			B				
Approach Delay (s)		13.1			10.7			17.3			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
67: N Roosevelt Ave. & N H St

4/9/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	17	0	3	1	0	0	1	1099	24	24	284	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Lane Util. Factor	1.00	1.00			1.00			0.95	1.00		0.95	
Frt	1.00	0.85			1.00			1.00	0.85		1.00	
Flt Protected	0.95	1.00			0.95			1.00	1.00		1.00	
Satd. Flow (prot)	1770	1583			1770			3539	1583		3524	
Flt Permitted	0.76	1.00			0.76			0.95	1.00		0.85	
Satd. Flow (perm)	1407	1583			1407			3380	1583		3004	
Peak-hour factor, PHF	0.77	0.77	0.77	0.25	0.25	0.25	0.85	0.85	0.85	0.90	0.90	0.90
Adj. Flow (vph)	22	0	4	4	0	0	1	1293	28	27	316	1
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	22	1	0	0	4	0	0	1294	21	0	344	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	8.0	8.0			8.0			34.1	34.1		34.1	
Effective Green, g (s)	8.0	8.0			8.0			34.1	34.1		34.1	
Actuated g/C Ratio	0.16	0.16			0.16			0.67	0.67		0.67	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	221	249			221			2264	1061		2013	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.02				0.00			c0.38	0.01		0.11	
v/c Ratio	0.10	0.00			0.02			0.57	0.02		0.17	
Uniform Delay, d1	18.4	18.1			18.1			4.5	2.8		3.1	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.0			0.1			0.4	0.0		0.1	
Delay (s)	18.8	18.1			18.2			4.9	2.8		3.2	
Level of Service	B	B			B			A	A		A	
Approach Delay (s)		18.7			18.2			4.9			3.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	8.8
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
67: N Roosevelt Ave. & N H St

4/9/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	24	0	2	0	1	0	1	468	17	16	802	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Lane Util. Factor	1.00	1.00			1.00			0.95	1.00		0.95	
Frt	1.00	0.85			1.00			1.00	0.85		1.00	
Flt Protected	0.95	1.00			1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1770	1583			1863			3539	1583		3535	
Flt Permitted	0.76	1.00			1.00			0.95	1.00		0.94	
Satd. Flow (perm)	1407	1583			1863			3376	1583		3341	
Peak-hour factor, PHF	0.90	0.90	0.90	0.25	0.25	0.25	0.97	0.97	0.97	0.79	0.79	0.79
Adj. Flow (vph)	27	0	2	0	4	0	1	482	18	20	1015	1
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	6	0	0	0
Lane Group Flow (vph)	27	0	0	0	4	0	0	483	12	0	1036	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	7.4	7.4			7.4			31.1	31.1		31.1	
Effective Green, g (s)	7.4	7.4			7.4			31.1	31.1		31.1	
Actuated g/C Ratio	0.16	0.16			0.16			0.66	0.66		0.66	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	220	248			291			2220	1041		2197	
v/s Ratio Prot		0.00			0.00							
v/s Ratio Perm	c0.02							0.14	0.01		c0.31	
v/c Ratio	0.12	0.00			0.01			0.22	0.01		0.47	
Uniform Delay, d1	17.2	16.8			16.9			3.2	2.8		4.0	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.0			0.0			0.1	0.0		0.2	
Delay (s)	17.7	16.8			16.9			3.3	2.8		4.2	
Level of Service	B	B			B			A	A		A	
Approach Delay (s)		17.6			16.9			3.3			4.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	4.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	8.8
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: E McKenzie Ave. & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	52	27	33	35	0	0	0	0	81	1009	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2						4.9	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1777			1818						5038	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1777			1489						5038	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79
Adj. Flow (vph)	0	60	31	37	39	0	0	0	0	103	1277	54
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	69	0	0	76	0	0	0	0	0	1428	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		6.6			6.6						23.2	
Effective Green, g (s)		6.6			6.6						23.2	
Actuated g/C Ratio		0.17			0.17						0.60	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		301			253						3005	
v/s Ratio Prot		0.04									c0.28	
v/s Ratio Perm					c0.05							
v/c Ratio		0.23			0.30						0.48	
Uniform Delay, d1		14.0			14.1						4.4	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.5			0.9						0.2	
Delay (s)		14.5			15.0						4.7	
Level of Service		B			B						A	
Approach Delay (s)		14.5			15.0			0.0			4.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	38.9	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: E McKenzie Ave. & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	64	38	39	59	0	0	0	0	48	584	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2						4.9	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1769			1827						5011	
Flt Permitted		1.00			0.81						1.00	
Satd. Flow (perm)		1769			1518						5011	
Peak-hour factor, PHF	0.77	0.77	0.77	0.79	0.79	0.79	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	83	49	49	75	0	0	0	0	54	656	57
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	93	0	0	124	0	0	0	0	0	752	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		7.5			7.5						20.8	
Effective Green, g (s)		7.5			7.5						20.8	
Actuated g/C Ratio		0.20			0.20						0.56	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		355			304						2787	
v/s Ratio Prot		0.05									c0.15	
v/s Ratio Perm					c0.08							
v/c Ratio		0.26			0.41						0.27	
Uniform Delay, d1		12.6			13.0						4.3	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.5			1.2						0.1	
Delay (s)		13.2			14.2						4.4	
Level of Service		B			B						A	
Approach Delay (s)		13.2			14.2			0.0			4.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
69: E McKenzie Ave. & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	90	0	0	50	49	17	415	23	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2			4.9				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			0.99				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1834			1738			5038				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1587			1738			5038				
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	53	115	0	0	62	61	20	494	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	46	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	168	0	0	77	0	0	530	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		7.3			7.3			13.0				
Effective Green, g (s)		7.3			7.3			13.0				
Actuated g/C Ratio		0.25			0.25			0.44				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		394			432			2228				
v/s Ratio Prot					0.04			c0.11				
v/s Ratio Perm		c0.11										
v/c Ratio		0.43			0.18			0.24				
Uniform Delay, d1		9.3			8.7			5.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.0			0.3			0.0				
Delay (s)		10.3			9.0			5.1				
Level of Service		B			A			A				
Approach Delay (s)		10.3			9.0			5.1			0.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	29.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
69: E McKenzie Ave. & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	64	0	0	78	109	20	1037	24	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2			4.9				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1822			1716			5064				
Flt Permitted		0.75			1.00			1.00				
Satd. Flow (perm)		1405			1716			5064				
Peak-hour factor, PHF	0.72	0.72	0.72	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	71	89	0	0	92	128	24	1220	28	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	160	0	0	204	0	0	1268	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		8.5			8.5			19.8				
Effective Green, g (s)		8.5			8.5			19.8				
Actuated g/C Ratio		0.23			0.23			0.53				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		319			390			2681				
v/s Ratio Prot					c0.12			c0.25				
v/s Ratio Perm		0.11										
v/c Ratio		0.50			0.52			0.47				
Uniform Delay, d1		12.6			12.7			5.5				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.7			1.6			0.0				
Delay (s)		14.3			14.3			5.6				
Level of Service		B			B			A				
Approach Delay (s)		14.3			14.3			5.6			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
70: 180 EB Off-Ramp & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	195	163	0	0	0	0	0	0	343	836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.93									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3298									3488	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3298									3488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	0	212	177	0	0	0	0	0	0	429	1045	0
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	350	0	0	0	0	0	0	0	0	1417	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		15.5									30.5	
Effective Green, g (s)		15.5									30.5	
Actuated g/C Ratio		0.28									0.56	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		933									1941	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.37									0.73	
Uniform Delay, d1		15.8									9.1	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.8									1.9	
Delay (s)		16.6									11.0	
Level of Service		B									B	
Approach Delay (s)		16.6			0.0			0.0			11.0	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.8
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
70: 180 EB Off-Ramp & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	219	122	0	0	0	0	0	0	355	316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.95									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3350									3448	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3350									3448	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	261	145	0	0	0	0	0	0	413	367	0
RTOR Reduction (vph)	0	97	0	0	0	0	0	0	0	0	224	0
Lane Group Flow (vph)	0	309	0	0	0	0	0	0	0	0	556	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		14.1									19.3	
Effective Green, g (s)		14.1									19.3	
Actuated g/C Ratio		0.33									0.46	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		1119									1577	
v/s Ratio Prot		c0.09										
v/s Ratio Perm											0.16	
v/c Ratio		0.28									0.35	
Uniform Delay, d1		10.3									7.4	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.4									0.3	
Delay (s)		10.7									7.8	
Level of Service		B									A	
Approach Delay (s)		10.7			0.0			0.0			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	8.8
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
71: 180 EB On-Ramp & N Van Ness Ave

4/9/2012

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	198	339	0	0	167	114	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6	4.6					
Lane Util. Factor	1.00	1.00			0.95	1.00					
Frt	1.00	1.00			1.00	0.85					
Flt Protected	0.95	0.95			1.00	1.00					
Satd. Flow (prot)	1770	1770			3539	1583					
Flt Permitted	0.95	0.95			1.00	1.00					
Satd. Flow (perm)	1770	1770			3539	1583					
Peak-hour factor, PHF	0.89	0.89	0.89	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	381	0	0	190	130	0	0	0	0	0
RTOR Reduction (vph)	139	0	0	0	0	93	0	0	0	0	0
Lane Group Flow (vph)	83	381	0	0	190	37	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	9.9	9.9			7.5	7.5					
Effective Green, g (s)	9.9	9.9			7.5	7.5					
Actuated g/C Ratio	0.37	0.37			0.28	0.28					
Clearance Time (s)	4.6	4.6			4.6	4.6					
Vehicle Extension (s)	5.0	5.0			4.5	4.5					
Lane Grp Cap (vph)	659	659			998	446					
v/s Ratio Prot	0.05	c0.22			c0.05						
v/s Ratio Perm						0.02					
v/c Ratio	0.13	0.58			0.19	0.08					
Uniform Delay, d1	5.5	6.7			7.2	7.0					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.2	2.0			0.2	0.1					
Delay (s)	5.7	8.6			7.4	7.2					
Level of Service	A	A			A	A					
Approach Delay (s)		7.6			7.3			0.0		0.0	
Approach LOS		A			A			A		A	

Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	26.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
71: 180 EB On-Ramp & N Van Ness Ave

4/9/2012

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	188	360	0	0	413	392	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6			4.6	4.6					
Lane Util. Factor	1.00	1.00			0.95	1.00					
Frt	1.00	1.00			1.00	0.85					
Flt Protected	0.95	0.95			1.00	1.00					
Satd. Flow (prot)	1770	1770			3539	1583					
Flt Permitted	0.95	0.95			1.00	1.00					
Satd. Flow (perm)	1770	1770			3539	1583					
Peak-hour factor, PHF	0.85	0.85	0.85	0.70	0.70	0.70	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	424	0	0	590	560	0	0	0	0	0
RTOR Reduction (vph)	130	0	0	0	0	121	0	0	0	0	0
Lane Group Flow (vph)	91	424	0	0	590	439	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	14.4	14.4			18.4	18.4					
Effective Green, g (s)	14.4	14.4			18.4	18.4					
Actuated g/C Ratio	0.34	0.34			0.44	0.44					
Clearance Time (s)	4.6	4.6			4.6	4.6					
Vehicle Extension (s)	5.0	5.0			4.5	4.5					
Lane Grp Cap (vph)	607	607			1550	694					
v/s Ratio Prot	0.05	c0.24			0.17						
v/s Ratio Perm						c0.28					
v/c Ratio	0.15	0.70			0.38	0.63					
Uniform Delay, d1	9.6	11.9			8.0	9.2					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.2	4.4			0.3	2.4					
Delay (s)	9.8	16.4			8.2	11.5					
Level of Service	A	B			A	B					
Approach Delay (s)		14.1			9.8			0.0		0.0	
Approach LOS		B			A			A		A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
72: 180 WB Ramps & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	277	563	4	40	0	0	0	0	0	651	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.7	3.7		3.7						4.1	
Lane Util. Factor		1.00	1.00		1.00						0.95	
Frt		1.00	0.85		1.00						0.98	
Flt Protected		1.00	1.00		1.00						1.00	
Satd. Flow (prot)		1863	1583		1854						3451	
Flt Permitted		1.00	1.00		0.97						1.00	
Satd. Flow (perm)		1863	1583		1810						3451	
Peak-hour factor, PHF	0.82	0.82	0.82	0.50	0.50	0.50	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	338	687	8	80	0	0	0	0	0	748	149
RTOR Reduction (vph)	0	0	76	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	338	611	0	88	0	0	0	0	0	869	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		26.2	26.2		26.2						25.1	
Effective Green, g (s)		26.2	26.2		26.2						25.1	
Actuated g/C Ratio		0.44	0.44		0.44						0.42	
Clearance Time (s)		3.7	3.7		3.7						4.1	
Vehicle Extension (s)		5.0	5.0		4.8						4.6	
Lane Grp Cap (vph)		826	702		802						1466	
v/s Ratio Prot		0.18									c0.25	
v/s Ratio Perm			c0.39		0.05							
v/c Ratio		0.41	0.87		0.11						0.59	
Uniform Delay, d1		11.2	14.9		9.6						13.1	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		0.7	12.1		0.1						0.9	
Delay (s)		11.9	27.0		9.7						14.0	
Level of Service		B	C		A						B	
Approach Delay (s)		22.0			9.7			0.0			14.0	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	7.8
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
72: 180 WB Ramps & N Fulton St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰↑						↑↑↱	
Volume (vph)	0	327	175	7	78	0	0	0	0	0	500	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.7	3.7		3.7						4.1	
Lane Util. Factor		1.00	1.00		1.00						0.95	
Frt		1.00	0.85		1.00						0.97	
Flt Protected		1.00	1.00		1.00						1.00	
Satd. Flow (prot)		1863	1583		1855						3437	
Flt Permitted		1.00	1.00		0.97						1.00	
Satd. Flow (perm)		1863	1583		1805						3437	
Peak-hour factor, PHF	0.96	0.96	0.96	0.70	0.70	0.70	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	341	182	10	111	0	0	0	0	0	610	146
RTOR Reduction (vph)	0	0	113	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	341	69	0	121	0	0	0	0	0	722	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		17.1	17.1		17.1						20.0	
Effective Green, g (s)		17.1	17.1		17.1						20.0	
Actuated g/C Ratio		0.38	0.38		0.38						0.45	
Clearance Time (s)		3.7	3.7		3.7						4.1	
Vehicle Extension (s)		5.0	5.0		4.8						4.6	
Lane Grp Cap (vph)		710	603		687						1531	
v/s Ratio Prot		c0.18									c0.21	
v/s Ratio Perm			0.04		0.07							
v/c Ratio		0.48	0.11		0.18						0.47	
Uniform Delay, d1		10.5	9.0		9.2						8.7	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		1.1	0.2		0.2						0.4	
Delay (s)		11.6	9.2		9.5						9.2	
Level of Service		B	A		A						A	
Approach Delay (s)		10.8			9.5			0.0			9.2	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	7.8
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	288	0	56	344	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3515		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3515		
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.92	0.92
Adj. Flow (vph)	331	0	66	405	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	331	0	0	471	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	12.3			13.8		
Effective Green, g (s)	12.3			13.8		
Actuated g/C Ratio	0.35			0.39		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	617			1374		
v/s Ratio Prot	c0.19			c0.13		
v/s Ratio Perm						
v/c Ratio	0.54			0.34		
Uniform Delay, d1	9.2			7.6		
Progression Factor	1.00			1.00		
Incremental Delay, d2	1.0			0.3		
Delay (s)	10.2			7.9		
Level of Service	B			A		
Approach Delay (s)	10.2			7.9	0.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	9.2
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
73: 180 WB Ramps & N Van Ness Ave

4/9/2012

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	325	0	85	564	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3516		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3516		
Peak-hour factor, PHF	0.96	0.96	0.72	0.72	0.92	0.92
Adj. Flow (vph)	339	0	118	783	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	339	0	0	901	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	15.1			23.7		
Effective Green, g (s)	15.1			23.7		
Actuated g/C Ratio	0.31			0.49		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	557			1736		
v/s Ratio Prot	c0.19			c0.26		
v/s Ratio Perm						
v/c Ratio	0.61			0.52		
Uniform Delay, d1	13.9			8.3		
Progression Factor	1.00			1.00		
Incremental Delay, d2	1.9			0.5		
Delay (s)	15.9			8.8		
Level of Service	B			A		
Approach Delay (s)	15.9			8.8	0.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
74: E Belmont Ave. & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	283	48	89	180	0	0	0	0	149	1014	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frt		0.98		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		3463		1770	3539						4986	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3463		1770	3539						4986	
Peak-hour factor, PHF	0.90	0.90	0.90	0.77	0.77	0.77	0.92	0.92	0.92	0.79	0.79	0.79
Adj. Flow (vph)	0	314	53	116	234	0	0	0	0	189	1284	149
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	352	0	116	234	0	0	0	0	0	1610	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		17.3		7.3	28.3						26.9	
Effective Green, g (s)		17.3		7.3	28.3						26.9	
Actuated g/C Ratio		0.27		0.11	0.44						0.42	
Clearance Time (s)		4.2		3.7	4.2						4.9	
Vehicle Extension (s)		6.8		2.0	6.8						0.2	
Lane Grp Cap (vph)		932		201	1558						2086	
v/s Ratio Prot		c0.10		c0.07	0.07						c0.32	
v/s Ratio Perm												
v/c Ratio		0.38		0.58	0.15						0.77	
Uniform Delay, d1		19.1		27.0	10.8						16.1	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		0.9		2.5	0.2						1.7	
Delay (s)		20.0		29.5	10.9						17.7	
Level of Service		B		C	B						B	
Approach Delay (s)		20.0			17.1			0.0			17.7	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.8
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
74: E Belmont Ave. & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	450	33	83	296	0	0	0	0	171	581	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frt		0.99		1.00	1.00						0.98	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		3503		1770	3539						4933	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3503		1770	3539						4933	
Peak-hour factor, PHF	0.97	0.97	0.97	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	464	34	100	357	0	0	0	0	192	653	133
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	493	0	100	357	0	0	0	0	0	954	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		19.5		6.6	29.8						20.0	
Effective Green, g (s)		19.5		6.6	29.8						20.0	
Actuated g/C Ratio		0.33		0.11	0.51						0.34	
Clearance Time (s)		4.2		3.7	4.2						4.9	
Vehicle Extension (s)		6.8		2.0	6.8						0.2	
Lane Grp Cap (vph)		1160		198	1791						1675	
v/s Ratio Prot		c0.14		c0.06	0.10						c0.19	
v/s Ratio Perm												
v/c Ratio		0.42		0.51	0.20						0.57	
Uniform Delay, d1		15.3		24.6	8.0						15.9	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		0.9		0.7	0.2						0.3	
Delay (s)		16.2		25.4	8.2						16.2	
Level of Service		B		C	A						B	
Approach Delay (s)		16.2			11.9			0.0			16.2	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
75: E Belmont Ave. & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	309	0	0	245	100	23	441	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1583		5073	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5073	1583			
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	141	351	0	0	302	123	25	485	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	92	0	0	17	0	0	0
Lane Group Flow (vph)	141	351	0	0	302	31	0	510	10	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	7.3	24.2			13.2	13.2		19.6	19.6			
Effective Green, g (s)	7.3	24.2			13.2	13.2		19.6	19.6			
Actuated g/C Ratio	0.14	0.46			0.25	0.25		0.37	0.37			
Clearance Time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	2.0	5.1			5.1	5.1		0.2	0.2			
Lane Grp Cap (vph)	244	1619			883	395		1880	587			
v/s Ratio Prot	c0.08	0.10			c0.09			c0.10				
v/s Ratio Perm						0.02			0.01			
v/c Ratio	0.58	0.22			0.34	0.08		0.27	0.02			
Uniform Delay, d1	21.4	8.6			16.3	15.2		11.7	10.5			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	2.1	0.1			0.5	0.2		0.0	0.0			
Delay (s)	23.4	8.8			16.8	15.4		11.7	10.6			
Level of Service	C	A			B	B		B	B			
Approach Delay (s)		13.0			16.4			11.6			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
75: E Belmont Ave. & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	490	0	0	341	92	33	1181	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	3539			3539	1583		5078	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5078	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.84	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	138	516	0	0	406	110	38	1373	24	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	80	0	0	14	0	0	0
Lane Group Flow (vph)	138	516	0	0	406	30	0	1411	10	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	8.1	28.8			17.0	17.0		23.7	23.7			
Effective Green, g (s)	8.1	28.8			17.0	17.0		23.7	23.7			
Actuated g/C Ratio	0.13	0.47			0.28	0.28		0.38	0.38			
Clearance Time (s)	3.7	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	2.0	5.1			5.1	5.1		0.2	0.2			
Lane Grp Cap (vph)	233	1655			977	437		1954	609			
v/s Ratio Prot	c0.08	0.15			c0.11			c0.28				
v/s Ratio Perm						0.02			0.01			
v/c Ratio	0.59	0.31			0.42	0.07		0.72	0.02			
Uniform Delay, d1	25.2	10.2			18.2	16.5		16.1	11.7			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	2.7	0.2			0.6	0.1		1.1	0.0			
Delay (s)	27.9	10.5			18.9	16.6		17.3	11.7			
Level of Service	C	B			B	B		B	B			
Approach Delay (s)		14.1			18.4			17.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	12.8
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	206	34	111	295	38	31	183	29	68	353	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3479		1770	3467		1770	3463	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	3479		1770	3467		1770	3463	
Peak-hour factor, PHF	0.85	0.85	0.85	0.84	0.84	0.84	0.72	0.72	0.72	0.72	0.72	0.72
Adj. Flow (vph)	65	242	40	132	351	45	43	254	40	94	490	82
RTOR Reduction (vph)	0	15	0	0	10	0	0	13	0	0	12	0
Lane Group Flow (vph)	65	267	0	132	386	0	43	281	0	94	560	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	4.5	15.5		7.5	18.5		3.9	15.7		6.6	28.4	
Effective Green, g (s)	4.5	15.5		7.5	18.5		3.9	15.7		6.6	28.4	
Actuated g/C Ratio	0.06	0.21		0.10	0.26		0.05	0.22		0.09	0.39	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	110	741		183	888		95	751		161	1357	
v/s Ratio Prot	0.04	0.08		c0.07	c0.11		0.02	0.08		c0.05	c0.16	
v/s Ratio Perm												
v/c Ratio	0.59	0.36		0.72	0.43		0.45	0.37		0.58	0.41	
Uniform Delay, d1	33.1	24.3		31.5	22.6		33.3	24.2		31.6	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.6		11.2	0.7		1.2	0.7		3.5	0.4	
Delay (s)	38.7	24.9		42.7	23.3		34.5	24.9		35.1	16.4	
Level of Service	D	C		D	C		C	C		D	B	
Approach Delay (s)		27.5			28.2			26.1			19.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	17.2
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
76: Fresno St. &

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	443	53	89	368	82	53	396	85	102	232	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	3443		1770	3446		1770	3405	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3483		1770	3443		1770	3446		1770	3405	
Peak-hour factor, PHF	0.94	0.94	0.94	0.85	0.85	0.85	0.77	0.77	0.77	0.88	0.88	0.88
Adj. Flow (vph)	76	471	56	105	433	96	69	514	110	116	264	89
RTOR Reduction (vph)	0	10	0	0	20	0	0	18	0	0	31	0
Lane Group Flow (vph)	76	517	0	105	509	0	69	606	0	116	322	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.6	20.7		7.4	21.5		6.3	19.2		7.6	30.5	
Effective Green, g (s)	6.6	20.7		7.4	21.5		6.3	19.2		7.6	30.5	
Actuated g/C Ratio	0.08	0.25		0.09	0.26		0.08	0.23		0.09	0.37	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	14.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	142	878		160	902		136	806		164	1265	
v/s Ratio Prot	0.04	c0.15		c0.06	0.15		0.04	c0.18		c0.07	0.09	
v/s Ratio Perm												
v/c Ratio	0.54	0.59		0.66	0.56		0.51	0.75		0.71	0.25	
Uniform Delay, d1	36.3	27.0		36.1	26.2		36.4	29.2		36.2	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	1.6		7.2	1.3		1.1	4.7		10.8	0.2	
Delay (s)	38.2	28.5		43.3	27.6		37.5	34.0		47.0	18.1	
Level of Service	D	C		D	C		D	C		D	B	
Approach Delay (s)		29.8			30.2			34.3			25.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	27.2
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
77: Belmont Steet & First Street

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	220	74	92	291	91	115	336	39	79	388	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3413		1770	3484		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3413		1770	3484		1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.80	0.80	0.80	0.78	0.78	0.78
Adj. Flow (vph)	77	265	89	100	316	99	144	420	49	101	497	103
RTOR Reduction (vph)	0	0	69	0	38	0	0	10	0	0	0	75
Lane Group Flow (vph)	77	265	20	100	377	0	144	459	0	101	497	28
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									2
Actuated Green, G (s)	5.8	14.5	14.5	6.4	15.1		7.4	17.9		6.5	17.0	17.0
Effective Green, g (s)	5.8	14.5	14.5	6.4	15.1		7.4	17.9		6.5	17.0	17.0
Actuated g/C Ratio	0.09	0.23	0.23	0.10	0.24		0.12	0.28		0.10	0.27	0.27
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	4.5	4.5	2.0	4.5		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)	163	813	364	180	817		208	988		182	953	426
v/s Ratio Prot	0.04	0.07		c0.06	c0.11		c0.08	0.13		0.06	c0.14	
v/s Ratio Perm			0.01									0.02
v/c Ratio	0.47	0.33	0.06	0.56	0.46		0.69	0.46		0.55	0.52	0.07
Uniform Delay, d1	27.2	20.2	19.0	27.0	20.5		26.8	18.6		26.9	19.6	17.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.4	0.1	2.1	0.7		7.8	0.7		2.1	1.0	0.1
Delay (s)	28.0	20.6	19.1	29.1	21.2		34.5	19.4		29.0	20.6	17.3
Level of Service	C	C	B	C	C		C	B		C	C	B
Approach Delay (s)		21.6			22.8			22.9			21.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
77: Belmont Steet & First Street

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	459	127	112	372	153	109	570	52	131	430	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3385		1770	3495		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3385		1770	3495		1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.91	0.91	0.91	0.85	0.85	0.85
Adj. Flow (vph)	131	478	132	129	428	176	120	626	57	154	506	94
RTOR Reduction (vph)	0	0	96	0	54	0	0	8	0	0	0	68
Lane Group Flow (vph)	131	478	36	129	550	0	120	675	0	154	506	26
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									2
Actuated Green, G (s)	7.5	19.5	19.5	7.5	19.5		7.3	19.0		7.9	19.6	19.6
Effective Green, g (s)	7.5	19.5	19.5	7.5	19.5		7.3	19.0		7.9	19.6	19.6
Actuated g/C Ratio	0.10	0.27	0.27	0.10	0.27		0.10	0.26		0.11	0.27	0.27
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	4.5	4.5	2.0	4.5		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)	185	962	431	185	921		180	926		195	967	433
v/s Ratio Prot	c0.07	0.14		0.07	c0.16		0.07	c0.19		c0.09	0.14	
v/s Ratio Perm			0.02									0.02
v/c Ratio	0.71	0.50	0.08	0.70	0.60		0.67	0.73		0.79	0.52	0.06
Uniform Delay, d1	31.0	22.0	19.4	31.0	22.7		31.0	24.0		31.1	22.1	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.7	0.7	0.1	8.9	1.4		7.0	3.6		17.5	1.0	0.1
Delay (s)	40.7	22.7	19.6	39.9	24.1		38.1	27.6		48.6	23.1	19.4
Level of Service	D	C	B	D	C		D	C		D	C	B
Approach Delay (s)		25.3			26.9			29.1			27.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	17.8
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	128	0	0	0	173	1160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.2					4.9
Lane Util. Factor	1.00					0.91
Frt	1.00					1.00
Flt Protected	0.95					0.99
Satd. Flow (prot)	1770					5053
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5053
Peak-hour factor, PHF	0.59	0.59	0.92	0.92	0.82	0.82
Adj. Flow (vph)	217	0	0	0	211	1415
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	217	0	0	0	0	1626
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	13.1					30.2
Effective Green, g (s)	13.1					30.2
Actuated g/C Ratio	0.25					0.58
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	443					2912
v/s Ratio Prot	c0.12					c0.32
v/s Ratio Perm						
v/c Ratio	0.49					0.56
Uniform Delay, d1	16.8					6.9
Progression Factor	1.00					1.00
Incremental Delay, d2	1.7					0.4
Delay (s)	18.5					7.4
Level of Service	B					A
Approach Delay (s)	18.5		0.0			7.4
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	99	0	0	0	246	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.2					4.9
Lane Util. Factor	1.00					0.91
Frt	1.00					1.00
Flt Protected	0.95					0.99
Satd. Flow (prot)	1770					5025
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5025
Peak-hour factor, PHF	0.75	0.75	0.92	0.92	0.89	0.89
Adj. Flow (vph)	132	0	0	0	276	875
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	132	0	0	0	0	1151
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	8.1					27.2
Effective Green, g (s)	8.1					27.2
Actuated g/C Ratio	0.18					0.61
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	323					3078
v/s Ratio Prot	c0.07					c0.23
v/s Ratio Perm						
v/c Ratio	0.41					0.37
Uniform Delay, d1	16.0					4.3
Progression Factor	1.00					1.00
Incremental Delay, d2	1.6					0.2
Delay (s)	17.7					4.5
Level of Service	B					A
Approach Delay (s)	17.7		0.0			4.5
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
79: CA 180 EB & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	170	0	0	128	217	2	406	260	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		5084	1583			
Flt Permitted	0.64	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1196	1863			1863	1583		5084	1583			
Peak-hour factor, PHF	0.79	0.79	0.79	0.70	0.70	0.70	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	215	0	0	183	310	2	441	283	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	185	0	0	174	0	0	0
Lane Group Flow (vph)	9	215	0	0	183	125	0	443	109	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	17.5	17.5			17.5	17.5		16.7	16.7			
Effective Green, g (s)	17.5	17.5			17.5	17.5		16.7	16.7			
Actuated g/C Ratio	0.40	0.40			0.40	0.40		0.39	0.39			
Clearance Time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	5.7	5.7			5.7	5.7		5.2	5.2			
Lane Grp Cap (vph)	483	753			753	640		1961	611			
v/s Ratio Prot		c0.12			0.10			c0.09				
v/s Ratio Perm	0.01					0.08			0.07			
v/c Ratio	0.02	0.29			0.24	0.20		0.23	0.18			
Uniform Delay, d1	7.7	8.7			8.5	8.3		9.0	8.8			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.0	0.5			0.4	0.4		0.1	0.3			
Delay (s)	7.8	9.2			9.0	8.7		9.1	9.1			
Level of Service	A	A			A	A		A	A			
Approach Delay (s)		9.2			8.8			9.1			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
79: CA 180 EB & N Abby St

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	233	0	0	98	192	0	832	578	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		5085	1583			
Flt Permitted	0.68	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1266	1863			1863	1583		5085	1583			
Peak-hour factor, PHF	0.87	0.87	0.87	0.82	0.82	0.82	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	20	268	0	0	120	234	0	945	657	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	48	0	0	224	0	0	0
Lane Group Flow (vph)	20	268	0	0	120	186	0	945	433	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	18.8	18.8			18.8	18.8		29.1	29.1			
Effective Green, g (s)	18.8	18.8			18.8	18.8		29.1	29.1			
Actuated g/C Ratio	0.33	0.33			0.33	0.33		0.51	0.51			
Clearance Time (s)	4.2	4.2			4.2	4.2		4.9	4.9			
Vehicle Extension (s)	5.7	5.7			5.7	5.7		5.2	5.2			
Lane Grp Cap (vph)	418	614			614	522		2596	808			
v/s Ratio Prot		c0.14			0.06			0.19				
v/s Ratio Perm	0.02					0.12			c0.27			
v/c Ratio	0.05	0.44			0.20	0.36		0.36	0.54			
Uniform Delay, d1	13.0	15.0			13.7	14.5		8.4	9.4			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.1	1.3			0.4	1.1		0.2	1.3			
Delay (s)	13.1	16.2			14.1	15.6		8.6	10.7			
Level of Service	B	B			B	B		A	B			
Approach Delay (s)		16.0			15.1			9.5			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
80: CA 180 WB & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	322	710	5	72	0	0	0	0	3	628	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	4.9
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frt		0.91		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1690		1770	1863						3538	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1690		1770	1863						3538	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	393	866	6	86	0	0	0	0	4	757	134
RTOR Reduction (vph)	0	74	0	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	0	1185	0	6	86	0	0	0	0	0	761	52
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		26.2		1.0	30.9						25.0	25.0
Effective Green, g (s)		26.2		1.0	30.9						25.0	25.0
Actuated g/C Ratio		0.40		0.02	0.48						0.38	0.38
Clearance Time (s)		4.2		3.7	4.2						4.9	4.9
Vehicle Extension (s)		4.9		2.0	4.6						5.2	5.2
Lane Grp Cap (vph)		681		27	886						1361	609
v/s Ratio Prot		c0.70		c0.00	0.05						c0.22	
v/s Ratio Perm												0.03
v/c Ratio		1.74		0.22	0.10						0.56	0.08
Uniform Delay, d1		19.4		31.6	9.4						15.7	12.7
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		339.1		1.5	0.1						0.9	0.1
Delay (s)		358.5		33.1	9.5						16.6	12.9
Level of Service		F		C	A						B	B
Approach Delay (s)		358.5			11.0			0.0			16.0	
Approach LOS		F			B			A			B	

Intersection Summary			
HCM Average Control Delay	207.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
80: CA 180 WB & N Blackstone Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	194	313	13	121	0	0	0	0	3	691	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2		3.7	4.2						4.9	4.9
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frt		0.92		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1708		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1708		1770	1863						3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.74	0.74	0.74	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	216	348	18	164	0	0	0	0	3	803	186
RTOR Reduction (vph)	0	55	0	0	0	0	0	0	0	0	0	112
Lane Group Flow (vph)	0	509	0	18	164	0	0	0	0	0	806	74
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		26.1		1.1	30.9						26.5	26.5
Effective Green, g (s)		26.1		1.1	30.9						26.5	26.5
Actuated g/C Ratio		0.39		0.02	0.46						0.40	0.40
Clearance Time (s)		4.2		3.7	4.2						4.9	4.9
Vehicle Extension (s)		4.9		2.0	4.6						5.2	5.2
Lane Grp Cap (vph)		670		29	866						1410	631
v/s Ratio Prot		c0.30		c0.01	0.09						c0.23	
v/s Ratio Perm												0.05
v/c Ratio		0.76		0.62	0.19						0.57	0.12
Uniform Delay, d1		17.5		32.5	10.4						15.6	12.6
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		5.9		26.1	0.2						0.9	0.2
Delay (s)		23.4		58.6	10.6						16.5	12.8
Level of Service		C		E	B						B	B
Approach Delay (s)		23.4			15.4			0.0			15.8	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.8
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
81: Broadway St & Amador St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	125	17	2	17	6	5	14	1	9	24	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.78	0.78	0.78	0.67	0.67	0.67	0.75	0.75	0.75
Hourly flow rate (vph)	7	132	18	3	22	8	7	21	1	12	32	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1300										
pX, platoon unblocked												
vC, conflicting volume	29			149			206	190	75	123	195	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	29			149			206	190	75	123	195	26
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	97	100	99	95	100
cM capacity (veh/h)	1582			1429			701	699	972	814	695	1044

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	73	84	32	30	48
Volume Left	7	0	3	7	12
Volume Right	0	18	8	1	4
cSH	1582	1700	1429	710	743
Volume to Capacity	0.00	0.05	0.00	0.04	0.06
Queue Length 95th (ft)	0	0	0	3	5
Control Delay (s)	0.8	0.0	0.6	10.3	10.2
Lane LOS	A		A	B	B
Approach Delay (s)	0.4		0.6	10.3	10.2
Approach LOS				B	B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
81: Broadway St & Amador St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	3	60	16	5	94	0	14	18	1	10	6	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.63	0.63	0.63	0.67	0.67	0.67	0.58	0.58	0.58
Hourly flow rate (vph)	4	80	21	8	149	0	21	27	1	17	10	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1300										
pX, platoon unblocked												
vC, conflicting volume	149			101			278	264	51	228	274	149
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	149			101			278	264	51	228	274	149
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	96	100	97	98	99
cM capacity (veh/h)	1430			1489			634	635	1007	680	626	871

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	44	61	157	49	36
Volume Left	4	0	8	21	17
Volume Right	0	21	0	1	9
cSH	1430	1700	1489	642	699
Volume to Capacity	0.00	0.04	0.01	0.08	0.05
Queue Length 95th (ft)	0	0	0	6	4
Control Delay (s)	0.7	0.0	0.4	11.1	10.4
Lane LOS	A		A	B	B
Approach Delay (s)	0.3		0.4	11.1	10.4
Approach LOS				B	B

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	19.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
82: Broadway St & San Joaquin St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	4	124	7	3	22	5	0	6	5	8	7	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.55	0.55	0.55	0.47	0.47	0.47
Hourly flow rate (vph)	4	132	7	4	27	6	0	11	9	17	15	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1008							
pX, platoon unblocked												
vC, conflicting volume	33			139			193	184	70	126	185	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			139			193	184	70	126	185	30
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	98	100
cM capacity (veh/h)	1578			1442			732	706	979	814	705	1038

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	70	73	36	20	36
Volume Left	4	0	4	0	17
Volume Right	0	7	6	9	4
cSH	1578	1700	1442	808	784
Volume to Capacity	0.00	0.04	0.00	0.02	0.05
Queue Length 95th (ft)	0	0	0	2	4
Control Delay (s)	0.5	0.0	0.8	9.6	9.8
Lane LOS	A		A	A	A
Approach Delay (s)	0.2		0.8	9.6	9.8
Approach LOS				A	A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
82: Broadway St & San Joaquin St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	9	63	4	5	90	4	1	20	2	14	9	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.59	0.59	0.59	0.72	0.72	0.72	0.68	0.68	0.68
Hourly flow rate (vph)	13	90	6	8	153	7	1	28	3	21	13	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1008							
pX, platoon unblocked												
vC, conflicting volume	159			96			308	295	48	260	294	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	159			96			308	295	48	260	294	156
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	95	100	97	98	99
cM capacity (veh/h)	1418			1496			597	606	1011	639	607	862

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	58	51	168	32	44
Volume Left	13	0	8	1	21
Volume Right	0	6	7	3	10
cSH	1418	1700	1496	628	669
Volume to Capacity	0.01	0.03	0.01	0.05	0.07
Queue Length 95th (ft)	1	0	0	4	5
Control Delay (s)	1.7	0.0	0.4	11.0	10.8
Lane LOS	A		A	B	B
Approach Delay (s)	0.9		0.4	11.0	10.8
Approach LOS				B	B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
83: F St & Fresno St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	41	9	49	32	12	30	77	814	36	21	284	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	2049	1742	1947	3869		1947	3585	
Flt Permitted	0.74	1.00	1.00	0.75	1.00	1.00	0.39	1.00		0.29	1.00	
Satd. Flow (perm)	1522	2049	1742	1536	2049	1742	802	3869		594	3585	
Peak-hour factor, PHF	0.75	0.75	0.75	0.54	0.54	0.54	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	55	12	65	59	22	56	87	915	40	24	323	362
RTOR Reduction (vph)	0	0	50	0	0	39	0	7	0	0	187	0
Lane Group Flow (vph)	55	12	15	59	22	17	87	948	0	24	498	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)	6.7	6.7	6.7	6.7	6.7	6.7	13.8	13.8		13.8	13.8	
Effective Green, g (s)	6.7	6.7	6.7	6.7	6.7	6.7	13.8	13.8		13.8	13.8	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.48	0.48		0.48	0.48	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	358	482	410	361	482	410	388	1873		288	1736	
v/s Ratio Prot		0.01			0.01			c0.25			0.14	
v/s Ratio Perm	0.04		0.01	c0.04		0.01	0.11			0.04		
v/c Ratio	0.15	0.02	0.04	0.16	0.05	0.04	0.22	0.51		0.08	0.29	
Uniform Delay, d1	8.6	8.4	8.4	8.7	8.4	8.4	4.3	5.0		4.0	4.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0	0.0	0.2	0.0	0.0	0.3	0.2		0.1	0.1	
Delay (s)	8.9	8.4	8.4	8.9	8.5	8.5	4.5	5.2		4.1	4.5	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		8.6			8.6			5.2			4.5	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	28.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
83: F st & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	28	74	75	38	35	71	387	45	32	812	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	2049	1742	1947	3833		1947	3752	
Flt Permitted	0.73	1.00	1.00	0.73	1.00	1.00	0.26	1.00		0.44	1.00	
Satd. Flow (perm)	1491	2049	1742	1505	2049	1742	536	3833		905	3752	
Peak-hour factor, PHF	0.81	0.81	0.81	0.85	0.85	0.85	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	44	35	91	88	45	41	92	503	58	37	944	302
RTOR Reduction (vph)	0	0	35	0	0	31	0	18	0	0	64	0
Lane Group Flow (vph)	44	35	56	88	45	10	92	543	0	37	1182	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)	7.2	7.2	7.2	7.2	7.2	7.2	15.3	15.3		15.3	15.3	
Effective Green, g (s)	7.2	7.2	7.2	7.2	7.2	7.2	15.3	15.3		15.3	15.3	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	352	484	411	355	484	411	269	1923		454	1882	
v/s Ratio Prot		0.02			0.02			0.14			c0.32	
v/s Ratio Perm	0.03		0.03	c0.06		0.01	0.17			0.04		
v/c Ratio	0.12	0.07	0.14	0.25	0.09	0.02	0.34	0.28		0.08	0.63	
Uniform Delay, d1	9.2	9.1	9.2	9.5	9.1	8.9	4.6	4.4		3.9	5.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.2	0.4	0.1	0.0	0.8	0.1		0.1	0.7	
Delay (s)	9.3	9.1	9.3	9.8	9.2	9.0	5.3	4.5		4.0	6.2	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		9.3			9.5			4.6			6.1	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	30.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
84: G St & Mono Street

4/9/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	58	36	110	91	37	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.96	0.96	0.50	0.92
Hourly flow rate (vph)	72	44	115	95	74	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1009			513		
pX, platoon unblocked						
vC, conflicting volume			116		418	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		418	94
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		86	99
cM capacity (veh/h)			1473		546	963

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	116	209	81
Volume Left	0	115	74
Volume Right	44	0	7
cSH	1700	1473	565
Volume to Capacity	0.07	0.08	0.14
Queue Length 95th (ft)	0	6	12
Control Delay (s)	0.0	4.5	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.5	12.4
Approach LOS			B

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	5	129	158	124	42	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.82	0.82	0.88	0.88
Hourly flow rate (vph)	6	150	193	151	48	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1009			513		
pX, platoon unblocked						
vC, conflicting volume			156		617	81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		617	81
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		88	98
cM capacity (veh/h)			1424		392	979

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	156	344	62
Volume Left	0	193	48
Volume Right	150	0	15
cSH	1700	1424	457
Volume to Capacity	0.09	0.14	0.14
Queue Length 95th (ft)	0	12	12
Control Delay (s)	0.0	5.0	14.1
Lane LOS		A	B
Approach Delay (s)	0.0	5.0	14.1
Approach LOS			B

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	58	60	9	3	66	5	7	4	2	1	8	81
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.87	0.87	0.87	0.65	0.65	0.65	0.75	0.75	0.75
Hourly flow rate (vph)	70	72	11	3	76	6	11	6	3	1	11	108
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		496										
pX, platoon unblocked												
vC, conflicting volume	82			83			416	306	78	309	309	79
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			83			416	306	78	309	309	79
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	99	100	100	98	89
cM capacity (veh/h)	1516			1514			462	578	983	613	576	982

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	153	85	20	120
Volume Left	70	3	11	1
Volume Right	11	6	3	108
cSH	1516	1514	539	918
Volume to Capacity	0.05	0.00	0.04	0.13
Queue Length 95th (ft)	4	0	3	11
Control Delay (s)	3.6	0.3	11.9	9.5
Lane LOS	A	A	B	A
Approach Delay (s)	3.6	0.3	11.9	9.5
Approach LOS			B	A

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	140	105	8	2	24	7	4	9	2	1	16	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.86	0.86	0.86	0.54	0.54	0.54	0.82	0.82	0.82
Hourly flow rate (vph)	175	131	10	2	28	8	7	17	4	1	20	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		487										
pX, platoon unblocked												
vC, conflicting volume	36			141			568	527	136	535	528	32
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	36			141			568	527	136	535	528	32
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			98	96	100	100	95	97
cM capacity (veh/h)	1575			1442			369	405	912	402	404	1042

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	316	38	28	56
Volume Left	175	2	7	1
Volume Right	10	8	4	35
cSH	1575	1442	425	658
Volume to Capacity	0.11	0.00	0.07	0.09
Queue Length 95th (ft)	9	0	5	7
Control Delay (s)	4.6	0.5	14.1	11.0
Lane LOS	A	A	B	B
Approach Delay (s)	4.6	0.5	14.1	11.0
Approach LOS			B	B

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
86: H St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	45	16	45	25	9	3	111	563	15	3	381	156
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.78	0.78	0.78	0.83	0.83	0.83	0.92	0.92	0.92
Hourly flow rate (vph)	51	18	51	32	12	4	134	678	18	3	414	170
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								713			458	
pX, platoon unblocked	0.99	0.99	0.99	0.99	0.99		0.99					
vC, conflicting volume	1122	1469	292	1228	1545	348	584			696		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1105	1456	268	1212	1532	348	563			696		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	62	84	93	68	88	99	87			100		
cM capacity (veh/h)	133	110	724	100	99	648	996			896		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	119	47	134	452	244	3	276	308
Volume Left	51	32	134	0	0	3	0	0
Volume Right	51	4	0	0	18	0	0	170
cSH	194	107	996	1700	1700	896	1700	1700
Volume to Capacity	0.61	0.44	0.13	0.27	0.14	0.00	0.16	0.18
Queue Length 95th (ft)	87	48	12	0	0	0	0	0
Control Delay (s)	49.2	63.2	9.2	0.0	0.0	9.0	0.0	0.0
Lane LOS	E	F	A			A		
Approach Delay (s)	49.2	63.2	1.5			0.1		
Approach LOS	E	F						

Intersection Summary

Average Delay	6.4		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
86: H St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕		↰	↑↱		↰	↑↱	
Volume (veh/h)	102	8	111	21	8	15	65	477	21	2	577	64
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.73	0.73	0.73	0.91	0.91	0.91	0.77	0.77	0.77
Hourly flow rate (vph)	124	10	135	29	11	21	71	524	23	3	749	83
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								698			474	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1227	1486	416	1199	1516	274	832			547		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	901	1208	0	867	1243	274	433			547		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	26	93	85	82	92	97	92			100		
cM capacity (veh/h)	169	142	916	158	135	724	948			1018		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	270	60	71	349	198	3	500	333
Volume Left	124	29	71	0	0	3	0	0
Volume Right	135	21	0	0	23	0	0	83
cSH	283	207	948	1700	1700	1018	1700	1700
Volume to Capacity	0.95	0.29	0.08	0.21	0.12	0.00	0.29	0.20
Queue Length 95th (ft)	231	29	6	0	0	0	0	0
Control Delay (s)	81.8	29.4	9.1	0.0	0.0	8.5	0.0	0.0
Lane LOS	F	D	A			A		
Approach Delay (s)	81.8	29.4	1.1			0.0		
Approach LOS	F	D						

Intersection Summary				
Average Delay	13.7			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
87: O St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	22	12	0	107	0	0	0	0	214	100	608
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	24	13	0	120	0	0	0	0	252	118	715

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	37	120	0	369	715
Volume Left (vph)	0	0	0	252	0
Volume Right (vph)	13	0	0	0	715
Hadj (s)	-0.18	0.03	0.00	0.17	-0.57
Departure Headway (s)	4.8	4.9	4.7	4.5	3.2
Degree Utilization, x	0.05	0.16	0.00	0.46	0.64
Capacity (veh/h)	683	687	721	780	1119
Control Delay (s)	8.0	8.8	7.7	11.2	11.6
Approach Delay (s)	8.0	8.8	0.0	11.5	
Approach LOS	A	A	A	B	

Intersection Summary			
Delay	11.1		
HCM Level of Service	B		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
87: O St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	111	24	0	223	0	0	0	6	211	17	135
Peak Hour Factor	0.76	0.76	0.76	0.78	0.78	0.78	0.50	0.50	0.50	0.88	0.88	0.88
Hourly flow rate (vph)	0	146	32	0	286	0	0	0	12	240	19	153

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	178	286	12	259	153
Volume Left (vph)	0	0	0	240	0
Volume Right (vph)	32	0	12	0	153
Hadj (s)	-0.07	0.03	-0.57	0.22	-0.57
Departure Headway (s)	5.0	4.9	5.0	5.3	3.2
Degree Utilization, x	0.25	0.39	0.02	0.38	0.14
Capacity (veh/h)	674	695	622	634	1121
Control Delay (s)	9.6	11.1	8.0	11.6	6.7
Approach Delay (s)	9.6	11.1	8.0	9.8	
Approach LOS	A	B	A	A	

Intersection Summary			
Delay	10.1		
HCM Level of Service	B		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

89: M St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	71	94	0	0	0	171	0	108	11	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	86	113	0	0	0	199	0	127	13	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1075										
pX, platoon unblocked												
vC, conflicting volume	0			113			384	284	57	304	284	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			113			384	284	57	304	284	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	78	99	100	100	100
cM capacity (veh/h)	1622			1474			527	591	998	495	591	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	86	57	57	199	85	55
Volume Left	86	0	0	0	0	0
Volume Right	0	0	0	199	0	13
cSH	1622	1700	1700	1700	591	653
Volume to Capacity	0.05	0.03	0.03	0.12	0.14	0.08
Queue Length 95th (ft)	4	0	0	0	12	7
Control Delay (s)	7.3	0.0	0.0	0.0	12.1	11.0
Lane LOS	A				B	B
Approach Delay (s)	3.2			0.0	11.7	
Approach LOS					B	

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	27.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis

89: M St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	553	100	0	0	0	251	0	146	31	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.83	0.83	0.83	0.83	0.83	0.83	0.92	0.92	0.92
Hourly flow rate (vph)	643	116	0	0	0	302	0	176	37	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			116			1554	1402	58	1469	1402	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			116			1554	1402	58	1469	1402	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	60			100			100	0	96	0	100	100
cM capacity (veh/h)	1622			1470			53	84	996	0	84	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	643	58	58	302	117	96
Volume Left	643	0	0	0	0	0
Volume Right	0	0	0	302	0	37
cSH	1622	1700	1700	1700	84	130
Volume to Capacity	0.40	0.03	0.03	0.18	1.40	0.74
Queue Length 95th (ft)	49	0	0	0	226	106
Control Delay (s)	8.7	0.0	0.0	0.0	325.8	86.2
Lane LOS	A				F	F
Approach Delay (s)	7.3			0.0	218.0	
Approach LOS					F	

Intersection Summary				
Average Delay	40.8			
Intersection Capacity Utilization	53.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
90: Broadway St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	78	242	16	4	62	35	12	2	15	60	5	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.66	0.66	0.66	0.71	0.71	0.71	0.66	0.66	0.66
Hourly flow rate (vph)	100	310	21	6	94	53	17	3	21	91	8	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		488										
pX, platoon unblocked												
vC, conflicting volume	147			331			683	680	165	510	663	120
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	147			331			683	680	165	510	663	120
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			94	99	98	78	98	97
cM capacity (veh/h)	1432			1225			302	344	850	408	352	908

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	255	176	153	41	124
Volume Left	100	0	6	17	91
Volume Right	0	21	53	21	26
cSH	1432	1700	1225	459	455
Volume to Capacity	0.07	0.10	0.00	0.09	0.27
Queue Length 95th (ft)	6	0	0	7	27
Control Delay (s)	3.4	0.0	0.4	13.6	15.8
Lane LOS	A		A	B	C
Approach Delay (s)	2.0		0.4	13.6	15.8
Approach LOS				B	C

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
90: Broadway St & Santa Clara Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	15	131	16	2	37	21	25	2	5	71	27	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.83	0.83	0.83	0.67	0.67	0.67	0.83	0.83	0.83
Hourly flow rate (vph)	21	187	23	2	45	25	37	3	7	86	33	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		490										
pX, platoon unblocked												
vC, conflicting volume	70			210			356	316	105	207	315	57
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	70			210			356	316	105	207	315	57
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			93	99	99	88	94	96
cM capacity (veh/h)	1529			1358			524	589	929	714	590	997

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	115	116	72	48	154
Volume Left	21	0	2	37	86
Volume Right	0	23	25	7	36
cSH	1529	1700	1358	567	730
Volume to Capacity	0.01	0.07	0.00	0.08	0.21
Queue Length 95th (ft)	1	0	0	7	20
Control Delay (s)	1.5	0.0	0.3	11.9	11.2
Lane LOS	A		A	B	B
Approach Delay (s)	0.7		0.3	11.9	11.2
Approach LOS				B	B

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	21.8%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
91: E Hamilton Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	2	4	6	0	21	4	96	8	44	171	9
Peak Hour Factor	0.40	0.40	0.40	0.84	0.84	0.84	0.79	0.79	0.79	0.84	0.84	0.84
Hourly flow rate (vph)	5	5	10	7	0	25	5	122	10	52	204	11

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	20	7	25	137	267
Volume Left (vph)	5	7	0	5	52
Volume Right (vph)	10	0	25	10	11
Hadj (s)	-0.22	0.23	-0.57	0.00	0.05
Departure Headway (s)	4.6	5.0	3.2	4.2	4.2
Degree Utilization, x	0.03	0.01	0.02	0.16	0.31
Capacity (veh/h)	715	651	1121	830	856
Control Delay (s)	7.7	8.1	6.3	8.0	9.0
Approach Delay (s)	7.7	6.7		8.0	9.0
Approach LOS	A	A		A	A

Intersection Summary			
Delay	8.5		
HCM Level of Service	A		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
91: E Hamilton Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	3	1	18	1	59	5	130	16	32	136	10
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.88	0.88	0.88	0.84	0.84	0.84
Hourly flow rate (vph)	18	4	1	27	1	88	6	148	18	38	162	12

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	24	28	88	172	212
Volume Left (vph)	18	27	0	6	38
Volume Right (vph)	1	0	88	18	12
Hadj (s)	0.15	0.22	-0.57	-0.02	0.04
Departure Headway (s)	4.9	5.0	3.2	4.2	4.2
Degree Utilization, x	0.03	0.04	0.08	0.20	0.25
Capacity (veh/h)	667	658	1121	828	832
Control Delay (s)	8.1	8.2	6.5	8.3	8.7
Approach Delay (s)	8.1	6.9		8.3	8.7
Approach LOS	A	A		A	A

Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
92: E California Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	3	2	3	4	8	4	100	8	139	140	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.94	0.94	0.94	0.82	0.82	0.82	0.86	0.86	0.86
Hourly flow rate (vph)	2	6	4	3	4	9	5	122	10	162	163	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	659	653	188	655	674	127	214			132		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	659	653	188	655	674	127	214			132		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	99	99	99	100			89		
cM capacity (veh/h)	338	342	854	340	333	923	1356			1453		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	16	137	376
Volume Left	2	3	5	162
Volume Right	4	9	10	51
cSH	427	509	1356	1453
Volume to Capacity	0.03	0.03	0.00	0.11
Queue Length 95th (ft)	2	2	0	9
Control Delay (s)	13.7	12.3	0.3	3.9
Lane LOS	B	B	A	A
Approach Delay (s)	13.7	12.3	0.3	3.9
Approach LOS	B	B		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
92: E California Ave & Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	12	4	2	10	5	12	4	123	14	138	152	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.88	0.88	0.88	0.86	0.86	0.86
Hourly flow rate (vph)	16	5	3	13	7	16	5	140	16	160	177	65
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	706	695	209	692	720	148	242			156		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706	695	209	692	720	148	242			156		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	98	100	96	98	98	100			89		
cM capacity (veh/h)	309	323	831	321	313	899	1325			1424		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	24	36	160	402
Volume Left	16	13	5	160
Volume Right	3	16	16	65
cSH	336	447	1325	1424
Volume to Capacity	0.07	0.08	0.00	0.11
Queue Length 95th (ft)	6	7	0	9
Control Delay (s)	16.6	13.8	0.2	3.7
Lane LOS	C	B	A	A
Approach Delay (s)	16.6	13.8	0.2	3.7
Approach LOS	C	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
96: E Church Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	34	153	45	29	151	178	249	177	44	51	239	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3777		1947	3749	
Flt Permitted	0.65	1.00	1.00	0.61	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1324	3893	1742	1241	2049	1742	1947	3777		1947	3749	
Peak-hour factor, PHF	0.65	0.65	0.65	0.86	0.86	0.86	0.76	0.76	0.76	0.91	0.91	0.91
Adj. Flow (vph)	52	235	69	34	176	207	328	233	58	56	263	86
RTOR Reduction (vph)	0	0	52	0	0	157	0	32	0	0	61	0
Lane Group Flow (vph)	52	235	17	34	176	50	328	259	0	56	288	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	10.9	10.9	10.9	10.9	10.9	10.9	10.8	20.4		1.7	11.3	
Effective Green, g (s)	10.9	10.9	10.9	10.9	10.9	10.9	10.8	20.4		1.7	11.3	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.45		0.04	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	943	422	301	496	422	467	1712		74	941	
v/s Ratio Prot		0.06			c0.09		c0.17	0.07		0.03	c0.08	
v/s Ratio Perm	0.04		0.01	0.03		0.03						
v/c Ratio	0.16	0.25	0.04	0.11	0.35	0.12	0.70	0.15		0.76	0.31	
Uniform Delay, d1	13.4	13.8	13.0	13.3	14.1	13.3	15.6	7.2		21.4	13.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0	0.2	0.4	0.1	4.7	0.0		35.0	0.2	
Delay (s)	13.7	13.9	13.1	13.5	14.6	13.4	20.4	7.3		56.4	13.9	
Level of Service	B	B	B	B	B	B	C	A		E	B	
Approach Delay (s)		13.7			13.9			14.2			19.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
96: E Church Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	65	202	37	31	210	266	228	131	29	59	249	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3787		1947	3699	
Flt Permitted	0.55	1.00	1.00	0.62	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1133	3893	1742	1267	2049	1742	1947	3787		1947	3699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.82	0.82	0.82	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	68	213	39	38	256	324	251	144	32	79	332	165
RTOR Reduction (vph)	0	0	28	0	0	231	0	21	0	0	119	0
Lane Group Flow (vph)	68	213	11	38	256	93	251	155	0	79	378	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	12.0	12.0	12.0	12.0	12.0	12.0	6.2	14.7		3.2	11.7	
Effective Green, g (s)	12.0	12.0	12.0	12.0	12.0	12.0	6.2	14.7		3.2	11.7	
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.15	0.35		0.08	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	1115	499	363	587	499	288	1329		149	1033	
v/s Ratio Prot		0.05			c0.12		c0.13	c0.04		0.04	c0.10	
v/s Ratio Perm	0.06		0.01	0.03		0.05						
v/c Ratio	0.21	0.19	0.02	0.10	0.44	0.19	0.87	0.12		0.53	0.37	
Uniform Delay, d1	11.4	11.3	10.7	11.0	12.2	11.3	17.5	9.2		18.6	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1	0.0	0.1	0.5	0.2	23.8	0.0		3.6	0.2	
Delay (s)	11.7	11.4	10.8	11.1	12.7	11.4	41.3	9.2		22.2	12.3	
Level of Service	B	B	B	B	B	B	D	A		C	B	
Approach Delay (s)		11.4			12.0			28.1			13.7	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
101: S East Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	15	38	4	13	29	6	6	169	50	14	323	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1947	2018		1947	1994		1947	3893	1742	1947	3893	1742
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1947	2018		1947	1994		1947	3893	1742	1947	3893	1742
Peak-hour factor, PHF	0.71	0.71	0.71	0.63	0.63	0.63	0.82	0.82	0.82	0.91	0.91	0.91
Adj. Flow (vph)	21	54	6	21	46	10	7	206	61	15	355	21
RTOR Reduction (vph)	0	5	0	0	8	0	0	0	45	0	0	15
Lane Group Flow (vph)	21	55	0	21	48	0	7	206	16	15	355	6
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	0.8	7.0		0.8	7.0		0.7	8.8	8.8	0.7	8.8	8.8
Effective Green, g (s)	0.8	7.0		0.8	7.0		0.7	8.8	8.8	0.7	8.8	8.8
Actuated g/C Ratio	0.02	0.21		0.02	0.21		0.02	0.26	0.26	0.02	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	47	424		47	419		41	1029	460	41	1029	460
v/s Ratio Prot	c0.01	c0.03		0.01	0.02		0.00	0.05		c0.01	c0.09	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.45	0.13		0.45	0.11		0.17	0.20	0.04	0.37	0.34	0.01
Uniform Delay, d1	16.0	10.7		16.0	10.6		16.0	9.5	9.1	16.1	9.9	9.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.1		6.6	0.1		2.0	0.1	0.0	5.5	0.2	0.0
Delay (s)	22.7	10.8		22.7	10.8		18.0	9.6	9.1	21.5	10.1	9.1
Level of Service	C	B		C	B		B	A	A	C	B	A
Approach Delay (s)		13.9			14.0			9.7			10.5	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
101: S East Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	65	25	5	19	37	6	1	163	37	4	395	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1947	1996		1947	2006		1947	3893	1742	1947	3893	1742
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1947	1996		1947	2006		1947	3893	1742	1947	3893	1742
Peak-hour factor, PHF	0.85	0.85	0.85	0.60	0.60	0.60	0.81	0.81	0.81	0.99	0.99	0.99
Adj. Flow (vph)	76	29	6	32	62	10	1	201	46	4	399	25
RTOR Reduction (vph)	0	4	0	0	8	0	0	0	34	0	0	18
Lane Group Flow (vph)	76	31	0	32	64	0	1	201	12	4	399	7
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	1.7	9.2		0.5	8.0		0.5	9.5	9.5	0.5	9.5	9.5
Effective Green, g (s)	1.7	9.2		0.5	8.0		0.5	9.5	9.5	0.5	9.5	9.5
Actuated g/C Ratio	0.05	0.26		0.01	0.22		0.01	0.27	0.27	0.01	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	93	514		27	450		27	1036	464	27	1036	464
v/s Ratio Prot	c0.04	0.02		0.02	c0.03		0.00	0.05		c0.00	c0.10	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.82	0.06		1.19	0.14		0.04	0.19	0.03	0.15	0.39	0.01
Uniform Delay, d1	16.8	10.0		17.6	11.1		17.4	10.1	9.7	17.4	10.7	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.4	0.0		234.8	0.1		0.6	0.1	0.0	2.5	0.2	0.0
Delay (s)	57.2	10.0		252.4	11.2		17.9	10.2	9.7	19.9	11.0	9.7
Level of Service	E	B		F	B		B	B	A	B	B	A
Approach Delay (s)		42.4			85.4			10.2			11.0	
Approach LOS		D			F			B			B	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWL	NWT
Lane Configurations												
Volume (vph)	57	43	29	125	59	2	54	74	689	140	91	869
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95			0.97	0.95		0.97	0.95
Frt	1.00	0.94		1.00	1.00			1.00	0.97		1.00	0.97
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3776	3660		3776	3875			3776	3795		3776	3788
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3660		3776	3875			3776	3795		3776	3788
Peak-hour factor, PHF	0.85	0.85	0.85	0.97	0.97	0.97	0.78	0.78	0.78	0.78	0.83	0.83
Adj. Flow (vph)	67	51	34	129	61	2	69	95	883	179	110	1047
RTOR Reduction (vph)	0	31	0	0	2	0	0	0	20	0	0	22
Lane Group Flow (vph)	67	54	0	129	61	0	0	164	1042	0	110	1254
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	2.1	5.6		2.9	6.4			3.7	30.1		3.7	30.1
Effective Green, g (s)	2.1	5.6		2.9	6.4			3.7	30.1		3.7	30.1
Actuated g/C Ratio	0.04	0.10		0.05	0.11			0.06	0.52		0.06	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	136	352		188	425			240	1959		240	1956
v/s Ratio Prot	0.02	0.01		c0.03	c0.02			c0.04	0.27		0.03	c0.33
v/s Ratio Perm												
v/c Ratio	0.49	0.15		0.69	0.14			0.68	0.53		0.46	0.64
Uniform Delay, d1	27.6	24.2		27.3	23.5			26.7	9.4		26.3	10.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.8	0.2		9.9	0.2			7.8	0.3		1.4	0.7
Delay (s)	30.4	24.4		37.2	23.6			34.5	9.7		27.7	10.9
Level of Service	C	C		D	C			C	A		C	B
Approach Delay (s)		27.0			32.7				13.0			12.3
Approach LOS		C			C				B			B

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	190
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	229
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: E Jensen Ave & Golden State Blvd

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWL	NWT
Lane Configurations												
Volume (vph)	135	94	77	124	49	5	123	78	820	92	53	818
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95			0.97	0.95		0.97	0.95
Frt	1.00	0.93		1.00	0.99			1.00	0.98		1.00	0.98
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3776	3630		3776	3841			3776	3834		3776	3806
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3630		3776	3841			3776	3834		3776	3806
Peak-hour factor, PHF	0.85	0.85	0.85	0.97	0.97	0.97	0.85	0.85	0.85	0.85	0.92	0.92
Adj. Flow (vph)	159	111	91	128	51	5	145	92	965	108	58	889
RTOR Reduction (vph)	0	80	0	0	5	0	0	0	11	0	0	21
Lane Group Flow (vph)	159	122	0	128	51	0	0	237	1062	0	58	1023
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	4.8	6.2		2.9	4.3			6.3	24.2		2.2	20.1
Effective Green, g (s)	4.8	6.2		2.9	4.3			6.3	24.2		2.2	20.1
Actuated g/C Ratio	0.09	0.12		0.06	0.08			0.12	0.47		0.04	0.39
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	352	437		213	321			462	1802		161	1485
v/s Ratio Prot	c0.04	c0.03		0.03	0.01			c0.06	0.28		0.02	c0.27
v/s Ratio Perm												
v/c Ratio	0.45	0.28		0.60	0.16			0.51	0.59		0.36	0.69
Uniform Delay, d1	22.1	20.6		23.7	21.9			21.2	10.0		24.0	13.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.4		4.7	0.2			1.0	0.5		1.4	1.4
Delay (s)	23.0	21.0		28.4	22.2			22.1	10.5		25.3	14.4
Level of Service	C	C		C	C			C	B		C	B
Approach Delay (s)		21.9			26.5				12.6			15.0
Approach LOS		C			C				B			B

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	143
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	155
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis
104: Orange Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	49	0	17	0	0	0	0	149	69	13	137	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.66	0.66	0.66	0.90	0.90	0.90	0.98	0.98	0.98
Hourly flow rate (vph)	68	0	24	0	0	0	0	166	77	13	140	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	300	370	121	249	409	70	140			242		
vC1, stage 1 conf vol	204	204		166	166							
vC2, stage 2 conf vol	96	166		83	242							
vCu, unblocked vol	300	370	121	249	409	70	140			242		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	97	100	100	100	100			99		
cM capacity (veh/h)	659	590	907	684	567	979	1441			1321		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	92	0	0	110	132	13	93	47
Volume Left	68	0	0	0	0	13	0	0
Volume Right	24	0	0	0	77	0	0	0
cSH	709	1700	1700	1700	1700	1321	1700	1700
Volume to Capacity	0.13	0.00	0.00	0.06	0.08	0.01	0.05	0.03
Queue Length 95th (ft)	11	0	0	0	0	1	0	0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	B	A				A		
Approach Delay (s)	10.8	0.0	0.0			0.7		
Approach LOS	B	A						

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
104: Orange Ave & Golden State Blvd

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	136	0	32	0	0	0	0	124	49	17	252	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.79	0.79	0.79	0.90	0.90	0.90	0.79	0.79	0.79
Hourly flow rate (vph)	146	0	34	0	0	0	0	138	54	22	319	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	368	527	96	431	554	159	319			192		
vC1, stage 1 conf vol	165	165		362	362							
vC2, stage 2 conf vol	203	362		69	192							
vCu, unblocked vol	368	527	96	431	554	159	319			192		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	100	96	100	100	100	100			98		
cM capacity (veh/h)	615	508	941	534	496	857	1238			1379		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	181	0	0	92	100	22	213	106
Volume Left	146	0	0	0	0	22	0	0
Volume Right	34	0	0	0	54	0	0	0
cSH	659	1700	1700	1700	1700	1379	1700	1700
Volume to Capacity	0.27	0.00	0.00	0.05	0.06	0.02	0.13	0.06
Queue Length 95th (ft)	28	0	0	0	0	1	0	0
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Lane LOS	B	A				A		
Approach Delay (s)	12.5	0.0	0.0			0.5		
Approach LOS	B	A						

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	29.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												
Volume (veh/h)	0	464	286	0	0	0	0	0	0	142	56	0
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	527	325	0	0	0	0	0	0	167	66	0
Approach Volume (veh/h)		852			0			0			233	
Crossing Volume (veh/h)		233			0			694			0	
High Capacity (veh/h)		1154			1385			798			1385	
High v/c (veh/h)		0.74			0.00			0.00			0.17	
Low Capacity (veh/h)		952			1161			635			1161	
Low v/c (veh/h)		0.90			0.00			0.00			0.20	

Intersection Summary			
Maximum v/c High	0.74		
Maximum v/c Low	0.90		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												
Volume (veh/h)	0	169	286	0	0	0	0	0	0	260	134	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	184	311	0	0	0	0	0	0	321	165	0
Approach Volume (veh/h)		495			0			0			486	
Crossing Volume (veh/h)		486			0			505			0	
High Capacity (veh/h)		944			1385			930			1385	
High v/c (veh/h)		0.52			0.00			0.00			0.35	
Low Capacity (veh/h)		763			1161			751			1161	
Low v/c (veh/h)		0.65			0.00			0.00			0.42	

Intersection Summary				
Maximum v/c High	0.52			
Maximum v/c Low	0.65			
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												Yes
Volume (veh/h)	0	0	0	23	222	0	0	0	0	0	174	137
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.92	0.92	0.92	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	0	28	271	0	0	0	0	0	218	171
Approach Volume (veh/h)		0			299			0			218	
Crossing Volume (veh/h)		246			0			0			299	
High Capacity (veh/h)		1142			1385			1385			1095	
High v/c (veh/h)		0.00			0.22			0.00			0.20	
Low Capacity (veh/h)		941			1161			1161			899	
Low v/c (veh/h)		0.00			0.26			0.00			0.24	

Intersection Summary				
Maximum v/c High	0.22			
Maximum v/c Low	0.26			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	

HCM Unsignalized Intersection Capacity Analysis
106: SR 99 North Onramp & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												Yes
Volume (veh/h)	0	0	0	33	215	0	0	0	0	0	363	638
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.92	0.92	0.92	0.71	0.71	0.71
Hourly flow rate (vph)	0	0	0	42	276	0	0	0	0	0	511	899
Approach Volume (veh/h)		0			318			0			511	
Crossing Volume (veh/h)		554			0			0			318	
High Capacity (veh/h)		894			1385			1385			1079	
High v/c (veh/h)		0.00			0.23			0.00			0.47	
Low Capacity (veh/h)		720			1161			1161			884	
Low v/c (veh/h)		0.00			0.27			0.00			0.58	

Intersection Summary			
Maximum v/c High	0.47		
Maximum v/c Low	0.58		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	457	70	0	0	0	0	0	419	34	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	502	77	0	0	0	0	0	493	40	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											576	
pX, platoon unblocked												
vC, conflicting volume	164	533	0	551	513	184	0			533		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	164	533	0	551	513	184	0			533		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	36	83	100	100	100	100	100			100		
cM capacity (veh/h)	785	451	1084	362	463	826	1622			1031		

Direction, Lane #	SE 1	SE 2	NE 1	NE 2	NE 3
Volume Total	528	51	197	197	139
Volume Left	502	0	0	0	0
Volume Right	0	0	0	0	40
cSH	758	451	1700	1700	1700
Volume to Capacity	0.70	0.11	0.12	0.12	0.08
Queue Length 95th (ft)	144	10	0	0	0
Control Delay (s)	19.9	14.0	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	19.4		0.0		
Approach LOS	C				

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
107: Tuolumne St &

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	154	127	0	0	0	0	0	370	35	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	171	141	0	0	0	0	0	416	39	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											576	
pX, platoon unblocked												
vC, conflicting volume	139	455	0	506	435	158	0			455		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139	455	0	506	435	158	0			455		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	72	100	100	100	100	100			100		
cM capacity (veh/h)	818	500	1084	351	513	859	1622			1102		

Direction, Lane #	SE 1	SE 2	NE 1	NE 2	NE 3
Volume Total	218	94	166	166	122
Volume Left	171	0	0	0	0
Volume Right	0	0	0	0	39
cSH	719	500	1700	1700	1700
Volume to Capacity	0.30	0.19	0.10	0.10	0.07
Queue Length 95th (ft)	32	17	0	0	0
Control Delay (s)	12.2	13.9	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	12.7		0.0		
Approach LOS	B				

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	0	17	55	210	658	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.75	0.75	0.75	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	23	73	226	708	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											292	
pX, platoon unblocked												
vC, conflicting volume	772	1159	0	1159	1159	236	0			708		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	772	1159	0	1159	1159	236	0			708		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	86	90	86			100		
cM capacity (veh/h)	210	167	1084	135	167	766	1622			887		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3
Volume Total	15	81	367	283	283
Volume Left	0	0	226	0	0
Volume Right	0	73	0	0	0
cSH	167	574	1622	1700	1700
Volume to Capacity	0.09	0.14	0.14	0.17	0.17
Queue Length 95th (ft)	7	12	12	0	0
Control Delay (s)	28.6	12.3	5.1	0.0	0.0
Lane LOS	D	B	A		
Approach Delay (s)	14.9		2.0		
Approach LOS	B				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	27.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	0	36	60	210	314	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.73	0.73	0.73	0.90	0.90	0.90	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	49	82	233	349	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)											292	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	690	816	0	816	816	116	0			349		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	690	816	0	816	816	116	0			349		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	81	91	86			100		
cM capacity (veh/h)	231	265	1084	239	265	914	1622			1207		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3
Volume Total	33	99	303	140	140
Volume Left	0	0	233	0	0
Volume Right	0	82	0	0	0
cSH	265	649	1622	1700	1700
Volume to Capacity	0.12	0.15	0.14	0.08	0.08
Queue Length 95th (ft)	10	13	13	0	0
Control Delay (s)	20.5	11.5	6.1	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	13.8		3.2		
Approach LOS	B				

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	15	371	330	0	27	281
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.47	0.47	0.92	0.92	0.85	0.85
Hourly flow rate (vph)	32	789	359	0	32	331
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type			None			None
Median storage veh)						
Upstream signal (ft)			442			
pX, platoon unblocked						
vC, conflicting volume	588	359			359	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	588	359			359	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	0			97	
cM capacity (veh/h)	429	638			1197	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2	SW 3
Volume Total	821	359	32	165	165
Volume Left	32	0	32	0	0
Volume Right	789	0	0	0	0
cSH	664	1700	1197	1700	1700
Volume to Capacity	1.24	0.21	0.03	0.10	0.10
Queue Length 95th (ft)	749	0	2	0	0
Control Delay (s)	136.6	0.0	8.1	0.0	0.0
Lane LOS	F		A		
Approach Delay (s)	136.6	0.0	0.7		
Approach LOS	F				

Intersection Summary			
Average Delay	72.9		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	25	204	176	0	19	663
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.92	0.92	0.89	0.89
Hourly flow rate (vph)	28	229	191	0	21	745
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type			None			None
Median storage veh)						
Upstream signal (ft)			442			
pX, platoon unblocked						
vC, conflicting volume	606	191			191	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606	191			191	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	72			98	
cM capacity (veh/h)	422	818			1380	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2	SW 3
Volume Total	257	191	21	372	372
Volume Left	28	0	21	0	0
Volume Right	229	0	0	0	0
cSH	918	1700	1380	1700	1700
Volume to Capacity	0.28	0.11	0.02	0.22	0.22
Queue Length 95th (ft)	29	0	1	0	0
Control Delay (s)	11.4	0.0	7.7	0.0	0.0
Lane LOS	B		A		
Approach Delay (s)	11.4	0.0	0.2		
Approach LOS	B				

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	15	0	0	47	0	183	0	18	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0		4.0			
Lane Util. Factor		1.00			1.00		1.00		1.00			
Frt		1.00			1.00		1.00		0.85			
Flt Protected		1.00			1.00		0.95		1.00			
Satd. Flow (prot)		2049			2049		1947		1742			
Flt Permitted		1.00			1.00		0.95		1.00			
Satd. Flow (perm)		2049			2049		1947		1742			
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	0	20	0	0	64	0	197	0	19	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	14	0	0	0
Lane Group Flow (vph)	0	20	0	0	64	0	197	0	5	0	0	0
Turn Type	Perm						Prot		Perm	Prot		custom
Protected Phases		6			2		7	4		3		8
Permitted Phases	6								4			
Actuated Green, G (s)		11.0			11.0		6.3		6.3			
Effective Green, g (s)		11.0			11.0		6.3		6.3			
Actuated g/C Ratio		0.43			0.43		0.25		0.25			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		891			891		485		434			
v/s Ratio Prot		0.01			c0.03		c0.10					
v/s Ratio Perm									0.00			
v/c Ratio		0.02			0.07		0.41		0.01			
Uniform Delay, d1		4.1			4.2		7.9		7.2			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			0.0		0.6		0.0			
Delay (s)		4.1			4.2		8.5		7.2			
Level of Service		A			A		A		A			
Approach Delay (s)		4.1			4.2			8.4			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	11	0	0	48	0	334	0	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0		4.0			
Lane Util. Factor		1.00			1.00		1.00		1.00			
Frt		1.00			1.00		1.00		0.85			
Flt Protected		1.00			1.00		0.95		1.00			
Satd. Flow (prot)		2049			2049		1947		1742			
Flt Permitted		1.00			1.00		0.95		1.00			
Satd. Flow (perm)		2049			2049		1947		1742			
Peak-hour factor, PHF	0.57	0.57	0.57	0.63	0.63	0.63	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	19	0	0	76	0	375	0	17	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	0	19	0	0	76	0	375	0	7	0	0	0
Turn Type	Perm						Prot		Perm	Prot		custom
Protected Phases		6			2		7	4		3		8
Permitted Phases	6								4			
Actuated Green, G (s)		7.5			7.5		10.4		10.4			
Effective Green, g (s)		7.5			7.5		10.4		10.4			
Actuated g/C Ratio		0.29			0.29		0.40		0.40			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		593			593		782		699			
v/s Ratio Prot		0.01			c0.04		c0.19					
v/s Ratio Perm									0.00			
v/c Ratio		0.03			0.13		0.48		0.01			
Uniform Delay, d1		6.6			6.8		5.7		4.7			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			0.1		0.5		0.0			
Delay (s)		6.6			6.9		6.2		4.7			
Level of Service		A			A		A		A			
Approach Delay (s)		6.6			6.9			6.1			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	25.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	39	7	9	0	0	139	175	13	220	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.95		1.00	1.00			0.92		1.00	0.99	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1944		1947	2049			1878		1947	2037	
Flt Permitted		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1944		1947	2049			1878		1947	2037	
Peak-hour factor, PHF	0.65	0.65	0.65	0.80	0.80	0.80	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	115	60	9	11	0	0	151	190	16	272	11
RTOR Reduction (vph)	0	35	0	0	0	0	0	75	0	0	2	0
Lane Group Flow (vph)	0	140	0	9	11	0	0	266	0	16	281	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		8.2		0.4	12.6			10.0		0.4	14.4	
Effective Green, g (s)		8.2		0.4	12.6			10.0		0.4	14.4	
Actuated g/C Ratio		0.23		0.01	0.36			0.29		0.01	0.41	
Clearance Time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		455		22	738			537		22	838	
v/s Ratio Prot		c0.07		c0.00	0.01			c0.14		0.01	c0.14	
v/s Ratio Perm												
v/c Ratio		0.31		0.41	0.01			0.50		0.73	0.34	
Uniform Delay, d1		11.1		17.2	7.2			10.4		17.2	7.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4		11.9	0.0			0.7		76.4	0.2	
Delay (s)		11.4		29.1	7.2			11.1		93.6	7.3	
Level of Service		B		C	A			B		F	A	
Approach Delay (s)		11.4			17.1			11.1			11.9	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	35.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	58	31	30	18	0	0	74	99	0	533	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.95		1.00	1.00			0.91			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1942		1947	2049			1872			2039	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1942		1947	2049			1872			2039	
Peak-hour factor, PHF	0.82	0.82	0.82	0.48	0.48	0.48	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	71	38	62	38	0	0	80	108	0	711	25
RTOR Reduction (vph)	0	32	0	0	0	0	0	68	0	0	1	0
Lane Group Flow (vph)	0	77	0	62	38	0	0	120	0	0	735	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		7.4		2.0	13.4			12.8			26.2	
Effective Green, g (s)		7.4		2.0	13.4			12.8			26.2	
Actuated g/C Ratio		0.16		0.04	0.28			0.27			0.55	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		302		82	577			503			1122	
v/s Ratio Prot		c0.04		c0.03	0.02			0.06			c0.36	
v/s Ratio Perm												
v/c Ratio		0.25		0.76	0.07			0.24			0.65	
Uniform Delay, d1		17.7		22.6	12.5			13.6			7.5	
Progression Factor		.1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.4		32.1	0.0			0.2			1.4	
Delay (s)		18.1		54.7	12.6			13.8			8.9	
Level of Service		B		D	B			B			A	
Approach Delay (s)		18.1			38.7			13.8			8.9	
Approach LOS		B			D			B			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	256	0	14	163	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	0.95		0.95	1.00		
Satd. Flow (prot)	1947		1947	2049		
Flt Permitted	0.95		0.76	1.00		
Satd. Flow (perm)	1947		1552	2049		
Peak-hour factor, PHF	0.70	0.70	0.84	0.84	0.92	0.92
Adj. Flow (vph)	366	0	17	194	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	366	0	17	194	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	15.7		6.8	6.8		
Effective Green, g (s)	15.7		6.8	6.8		
Actuated g/C Ratio	0.51		0.22	0.22		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	1002		346	457		
v/s Ratio Prot	c0.19			c0.09		
v/s Ratio Perm			0.01			
v/c Ratio	0.37		0.05	0.42		
Uniform Delay, d1	4.4		9.3	10.2		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	0.2		0.1	0.6		
Delay (s)	4.6		9.4	10.8		
Level of Service	A		A	B		
Approach Delay (s)	4.6			10.7	0.0	
Approach LOS	A			B	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	30.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	157	0	47	132	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	0.95		0.95	1.00		
Satd. Flow (prot)	1947		1947	2049		
Flt Permitted	0.95		0.76	1.00		
Satd. Flow (perm)	1947		1552	2049		
Peak-hour factor, PHF	0.81	0.81	0.83	0.83	0.92	0.92
Adj. Flow (vph)	194	0	57	159	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	194	0	57	159	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	13.2		6.3	6.3		
Effective Green, g (s)	13.2		6.3	6.3		
Actuated g/C Ratio	0.48		0.23	0.23		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	935		356	469		
v/s Ratio Prot	c0.10			c0.08		
v/s Ratio Perm			0.04			
v/c Ratio	0.21		0.16	0.34		
Uniform Delay, d1	4.1		8.5	8.9		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	0.1		0.2	0.4		
Delay (s)	4.2		8.7	9.3		
Level of Service	A		A	A		
Approach Delay (s)	4.2			9.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	27.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	44	6	16	46	0	0	0	0	72	327	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.82	0.82	0.82
Hourly flow rate (vph)	0	53	7	18	51	0	0	0	0	88	399	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								344			414	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	603	578	402	608	582	0	406			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	567	541	358	572	544	0	362			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	87	99	95	88	100	100			95		
cM capacity (veh/h)	362	407	660	354	405	1085	1150			1623		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	60	68	0	0	88	406
Volume Left	0	18	0	0	88	0
Volume Right	7	0	0	0	0	7
cSH	427	391	1700	1700	1623	1700
Volume to Capacity	0.14	0.17	0.00	0.00	0.05	0.24
Queue Length 95th (ft)	12	16	0	0	4	0
Control Delay (s)	14.8	16.1	0.0	0.0	7.3	0.0
Lane LOS	B	C			A	
Approach Delay (s)	14.8	16.1	0.0		1.3	
Approach LOS	B	C				

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
113: L St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	20	17	55	74	0	0	0	0	31	351	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.75	0.75	0.75	0.92	0.92	0.92	0.81	0.81	0.81
Hourly flow rate (vph)	0	26	22	73	99	0	0	0	0	38	433	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								344			414	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	560	511	435	545	512	0	436			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516	464	384	499	465	0	385			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	94	97	82	79	100	100			98		
cM capacity (veh/h)	368	462	634	417	461	1085	1120			1623		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	48	172	0	0	38	436
Volume Left	0	73	0	0	38	0
Volume Right	22	0	0	0	0	2
cSH	527	441	1700	1700	1623	1700
Volume to Capacity	0.09	0.39	0.00	0.00	0.02	0.26
Queue Length 95th (ft)	7	45	0	0	2	0
Control Delay (s)	12.5	18.3	0.0	0.0	7.3	0.0
Lane LOS	B	C			A	
Approach Delay (s)	12.5	18.3	0.0		0.6	
Approach LOS	B	C				

Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
114: L St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	11	108	0	0	15	15	46	348	29	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.63	0.63	0.63	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	14	138	0	0	24	24	52	391	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								318			425	
pX, platoon unblocked												
vC, conflicting volume	335	527	0	580	511	212	0			424		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	335	527	0	580	511	212	0			424		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	69	100	100	95	97	97			100		
cM capacity (veh/h)	540	440	1084	294	450	794	1622			1132		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	153	48	247	228
Volume Left	14	0	52	0
Volume Right	0	24	0	33
cSH	448	574	1622	1700
Volume to Capacity	0.34	0.08	0.03	0.13
Queue Length 95th (ft)	37	7	2	0
Control Delay (s)	17.1	11.8	1.7	0.0
Lane LOS	C	B	A	
Approach Delay (s)	17.1	11.8	0.9	
Approach LOS	C	B		

Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
114: L St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	18	36	0	0	108	51	22	257	18	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.74	0.74	0.74	0.96	0.96	0.96	0.92	0.92	0.92
Hourly flow rate (vph)	23	46	0	0	146	69	23	268	19	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								318			425	
pX, platoon unblocked												
vC, conflicting volume	322	332	0	346	323	143	0			286		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322	332	0	346	323	143	0			286		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	92	100	100	75	92	99			100		
cM capacity (veh/h)	448	578	1084	543	585	878	1622			1273		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	68	215	157	153
Volume Left	23	0	23	0
Volume Right	0	69	0	19
cSH	527	655	1622	1700
Volume to Capacity	0.13	0.33	0.01	0.09
Queue Length 95th (ft)	11	36	1	0
Control Delay (s)	12.9	13.2	1.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.9	13.2	0.6	
Approach LOS	B	B		

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	29	32	0	0	0	0	0	0	185	397	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		1.00								1.00	1.00	
Frt		0.93								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1903								1947	2046	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1903								1947	2046	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	32	36	0	0	0	0	0	0	208	446	4
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	41	0	0	0	0	0	0	0	208	449	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		6.2								10.9	10.9	
Effective Green, g (s)		6.2								10.9	10.9	
Actuated g/C Ratio		0.25								0.43	0.43	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		470								846	889	
v/s Ratio Prot		c0.02								0.11	c0.22	
v/s Ratio Perm												
v/c Ratio		0.09								0.25	0.51	
Uniform Delay, d1		7.3								4.5	5.1	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		0.1								0.2	0.5	
Delay (s)		7.4								4.6	5.6	
Level of Service		A								A	A	
Approach Delay (s)		7.4			0.0			0.0			5.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	25.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	29	34	0	0	0	0	0	0	124	336	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		1.00								1.00	1.00	
Frt		0.93								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1900								1947	2039	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1900								1947	2039	
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	35	41	0	0	0	0	0	0	148	400	13
RTOR Reduction (vph)	0	32	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	44	0	0	0	0	0	0	0	148	411	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		6.5								6.9	14.5	
Effective Green, g (s)		6.5								6.9	14.5	
Actuated g/C Ratio		0.22								0.24	0.50	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		426								463	1020	
v/s Ratio Prot		c0.02								0.08	c0.20	
v/s Ratio Perm												
v/c Ratio		0.10								0.32	0.40	
Uniform Delay, d1		8.9								9.1	4.5	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		0.1								0.4	0.3	
Delay (s)		9.0								9.5	4.8	
Level of Service		A								A	A	
Approach Delay (s)		9.0			0.0			0.0			6.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	29.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	33	197	0	0	0	0	0	305	58	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.95						0.95				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3865						3799				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3865						3799				
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	38	224	0	0	0	0	0	335	64	0	0	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	32	0	0	0	0
Lane Group Flow (vph)	0	236	0	0	0	0	0	367	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		7.2						7.8				
Effective Green, g (s)		7.2						7.8				
Actuated g/C Ratio		0.31						0.34				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1210						1288				
v/s Ratio Prot								c0.10				
v/s Ratio Perm		0.06										
v/c Ratio		0.19						0.29				
Uniform Delay, d1		5.8						5.6				
Progression Factor		1.00						1.00				
Incremental Delay, d2		0.1						0.1				
Delay (s)		5.9						5.7				
Level of Service		A						A				
Approach Delay (s)		5.9			0.0			5.7			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	23.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	57	94	0	0	0	0	0	249	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.95						0.95				
Frt		1.00						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		3821						3755				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		3821						3755				
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	63	104	0	0	0	0	0	268	83	0	0	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	124	0	0	0	0	0	295	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		7.0						7.1				
Effective Green, g (s)		7.0						7.1				
Actuated g/C Ratio		0.32						0.32				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1210						1206				
v/s Ratio Prot								c0.08				
v/s Ratio Perm		0.03										
v/c Ratio		0.10						0.24				
Uniform Delay, d1		5.3						5.5				
Progression Factor		1.00						1.00				
Incremental Delay, d2		0.0						0.1				
Delay (s)		5.4						5.6				
Level of Service		A						A				
Approach Delay (s)		5.4			0.0			5.6			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	22.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
117: N St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	71	14	53	39	0	0	0	0	162	526	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.79	0.79	0.79	0.92	0.92	0.92	0.84	0.84	0.84
Hourly flow rate (vph)	0	84	16	67	49	0	0	0	0	193	626	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								404			496	
pX, platoon unblocked												
vC, conflicting volume	1044	1020	634	1070	1027	0	642			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1044	1020	634	1070	1027	0	642			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	60	97	44	76	100	100			88		
cM capacity (veh/h)	154	209	479	121	206	1085	943			1623		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2
Volume Total	0	100	67	49	0	0	193	642
Volume Left	0	0	67	0	0	0	193	0
Volume Right	0	16	0	0	0	0	0	15
cSH	1700	230	121	206	1700	1700	1623	1700
Volume to Capacity	0.00	0.43	0.56	0.24	0.00	0.00	0.12	0.38
Queue Length 95th (ft)	0	51	67	23	0	0	10	0
Control Delay (s)	0.0	32.2	66.8	27.8	0.0	0.0	7.5	0.0
Lane LOS	A	D	F	D			A	
Approach Delay (s)	32.2		50.3		0.0		1.7	
Approach LOS	D		F					

Intersection Summary			
Average Delay	10.0		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
117: N St & Stanislaus St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	22	9	106	64	0	0	0	0	42	348	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.57	0.57	0.57	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	0	40	16	186	112	0	0	0	0	49	409	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								404			489	
pX, platoon unblocked												
vC, conflicting volume	564	508	409	545	508	0	409			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564	508	409	545	508	0	409			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	91	97	53	75	100	100			97		
cM capacity (veh/h)	345	453	642	399	453	1085	1149			1623		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2
Volume Total	0	56	186	112	0	0	49	409
Volume Left	0	0	186	0	0	0	49	0
Volume Right	0	16	0	0	0	0	0	0
cSH	1700	496	399	453	1700	1700	1623	1700
Volume to Capacity	0.00	0.11	0.47	0.25	0.00	0.00	0.03	0.24
Queue Length 95th (ft)	0	10	60	24	0	0	2	0
Control Delay (s)	0.0	13.2	21.7	15.5	0.0	0.0	7.3	0.0
Lane LOS	A	B	C	C			A	
Approach Delay (s)	13.2		19.3		0.0		0.8	
Approach LOS	B		C					

Intersection Summary				
Average Delay	8.5			
Intersection Capacity Utilization	37.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	59	101	0	0	63	24	34	272	18	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.95				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		0.99				
Satd. Flow (prot)	1947	2049			2049	1742		3840				
Flt Permitted	0.71	1.00			1.00	1.00		0.99				
Satd. Flow (perm)	1459	2049			2049	1742		3840				
Peak-hour factor, PHF	0.82	0.82	0.82	0.91	0.91	0.91	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	72	123	0	0	69	26	41	328	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	18	0	9	0	0	0	0
Lane Group Flow (vph)	72	123	0	0	69	8	0	382	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	7.4	7.4			7.4	7.4		8.0				
Effective Green, g (s)	7.4	7.4			7.4	7.4		8.0				
Actuated g/C Ratio	0.32	0.32			0.32	0.32		0.34				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)	461	648			648	551		1313				
v/s Ratio Prot		c0.06			0.03							
v/s Ratio Perm	0.05					0.00		0.10				
v/c Ratio	0.16	0.19			0.11	0.01		0.29				
Uniform Delay, d1	5.8	5.8			5.7	5.5		5.6				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.2	0.1			0.1	0.0		0.1				
Delay (s)	5.9	6.0			5.7	5.5		5.8				
Level of Service	A	A			A	A		A				
Approach Delay (s)		5.9			5.7			5.8			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	23.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	42	0	0	120	44	18	282	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.95				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1947	2049			2049	1742		3869				
Flt Permitted	0.63	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1292	2049			2049	1742		3869				
Peak-hour factor, PHF	0.72	0.72	0.72	0.59	0.59	0.59	0.75	0.75	0.75	0.92	0.92	0.92
Adj. Flow (vph)	42	58	0	0	203	75	24	376	9	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	49	0	3	0	0	0	0
Lane Group Flow (vph)	42	58	0	0	203	26	0	406	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	8.4	8.4			8.4	8.4		8.3				
Effective Green, g (s)	8.4	8.4			8.4	8.4		8.3				
Actuated g/C Ratio	0.34	0.34			0.34	0.34		0.34				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)	439	697			697	592		1300				
v/s Ratio Prot		0.03			c0.10							
v/s Ratio Perm	0.03					0.01		0.11				
v/c Ratio	0.10	0.08			0.29	0.04		0.31				
Uniform Delay, d1	5.6	5.5			6.0	5.5		6.1				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.1	0.1			0.2	0.0		0.1				
Delay (s)	5.7	5.6			6.2	5.5		6.2				
Level of Service	A	A			A	A		A				
Approach Delay (s)		5.6			6.0			6.2			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	24.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	20	460	279	27	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3842		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3842		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	500	303	29	16	65
RTOR Reduction (vph)	0	0	14	0	0	51
Lane Group Flow (vph)	22	500	318	0	16	14
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	0.6	13.2	8.6		6.0	6.0
Effective Green, g (s)	0.6	13.2	8.6		6.0	6.0
Actuated g/C Ratio	0.02	0.49	0.32		0.22	0.22
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	43	1889	1215		429	384
v/s Ratio Prot	0.01	c0.13	0.08		0.01	
v/s Ratio Perm						c0.01
v/c Ratio	0.51	0.26	0.26		0.04	0.04
Uniform Delay, d1	13.2	4.1	6.9		8.3	8.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	9.9	0.1	0.1		0.0	0.0
Delay (s)	23.1	4.2	7.0		8.4	8.4
Level of Service	C	A	A		A	A
Approach Delay (s)		5.0	7.0		8.4	
Approach LOS		A	A		A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	27.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	16	538	443	22	18	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3865		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3865		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	585	482	24	20	46
RTOR Reduction (vph)	0	0	7	0	0	36
Lane Group Flow (vph)	17	585	499	0	20	10
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	0.6	14.5	9.9		6.1	6.1
Effective Green, g (s)	0.6	14.5	9.9		6.1	6.1
Actuated g/C Ratio	0.02	0.51	0.35		0.21	0.21
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	41	1974	1338		415	372
v/s Ratio Prot	0.01	c0.15	c0.13		c0.01	
v/s Ratio Perm						0.01
v/c Ratio	0.41	0.30	0.37		0.05	0.03
Uniform Delay, d1	13.8	4.1	7.0		8.9	8.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	0.1	0.2		0.0	0.0
Delay (s)	20.5	4.2	7.2		9.0	8.9
Level of Service	C	A	A		A	A
Approach Delay (s)		4.6	7.2		8.9	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	28.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
120: W McKinley Avenue & SR 99 Southbound Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	150	288	322	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.81	0.81	0.92	0.92
Hourly flow rate (vph)	276	174	356	398	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1223		
pX, platoon unblocked					0.86	
vC, conflicting volume			450		1471	363
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		1467	363
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			68		100	100
cM capacity (veh/h)			1110		82	682

Direction, Lane #	EB 1	WB 1
Volume Total	450	753
Volume Left	0	356
Volume Right	174	0
cSH	1700	1110
Volume to Capacity	0.26	0.32
Queue Length 95th (ft)	0	35
Control Delay (s)	0.0	6.8
Lane LOS		A
Approach Delay (s)	0.0	6.8
Approach LOS		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
120: W McKinley Avenue & SR 99 Southbound Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	288	113	227	511	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	360	141	241	544	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1173		
pX, platoon unblocked					0.91	
vC, conflicting volume			501		1457	431
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			501		1453	431
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			77		100	100
cM capacity (veh/h)			1063		101	625

Direction, Lane #	EB 1	WB 1
Volume Total	501	785
Volume Left	0	241
Volume Right	141	0
cSH	1700	1063
Volume to Capacity	0.29	0.23
Queue Length 95th (ft)	0	22
Control Delay (s)	0.0	5.1
Lane LOS		A
Approach Delay (s)	0.0	5.1
Approach LOS		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	223	0	0	474	9	131	8	135	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.88	0.88	0.83	0.83	0.92	0.86	0.92	0.86	0.92	0.92	0.92
Hourly flow rate (vph)	5	253	0	0	571	10	152	9	157	2	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					869							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	581			253			841	845	253	845	840	576
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			253			679	684	253	683	678	348
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			48	97	80	99	100	100
cM capacity (veh/h)	966			1312			291	296	785	227	299	558

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	259	581	318	3
Volume Left	5	0	152	2
Volume Right	0	10	157	1
cSH	966	1700	423	283
Volume to Capacity	0.01	0.34	0.75	0.01
Queue Length 95th (ft)	0	0	155	1
Control Delay (s)	0.2	0.0	35.1	17.9
Lane LOS	A		E	C
Approach Delay (s)	0.2	0.0	35.1	17.9
Approach LOS			E	C

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
121: W McKinley Ave &

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	260	0	0	533	2	204	3	287	18	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.79	0.79	0.93	0.93	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	2	329	0	0	573	2	229	3	322	20	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					819							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	575			329			917	909	329	909	908	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			329			805	794	329	795	793	395
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			7	99	55	86	100	98
cM capacity (veh/h)	974			1230			247	268	712	139	268	548

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	331	575	555	29
Volume Left	2	0	229	20
Volume Right	0	2	322	10
cSH	974	1700	399	184
Volume to Capacity	0.00	0.34	1.39	0.16
Queue Length 95th (ft)	0	0	680	14
Control Delay (s)	0.1	0.0	218.2	28.2
Lane LOS	A		F	D
Approach Delay (s)	0.1	0.0	218.2	28.2
Approach LOS			F	D

Intersection Summary			
Average Delay	81.8		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	39	280	473	96	243	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3518	3450		1770	1583
Flt Permitted		0.84	1.00		0.95	1.00
Satd. Flow (perm)		2964	3450		1770	1583
Peak-hour factor, PHF	0.74	0.74	0.84	0.84	0.75	0.75
Adj. Flow (vph)	53	378	563	114	324	69
RTOR Reduction (vph)	0	0	43	0	0	41
Lane Group Flow (vph)	0	431	634	0	324	28
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		16.0	16.0		16.0	16.0
Effective Green, g (s)		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.40	0.40		0.40	0.40
Clearance Time (s)		4.0	4.0		4.0	4.0
Lane Grp Cap (vph)		1186	1380		708	633
v/s Ratio Prot			c0.18		c0.18	
v/s Ratio Perm		0.15				0.02
v/c Ratio		0.36	0.46		0.46	0.04
Uniform Delay, d1		8.4	8.8		8.8	7.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	1.1		2.1	0.1
Delay (s)		9.3	9.9		10.9	7.5
Level of Service		A	A		B	A
Approach Delay (s)		9.3	9.9		10.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Volume (vph)	82	426	459	144	118	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3511	3412		1770	1583
Flt Permitted		0.79	1.00		0.95	1.00
Satd. Flow (perm)		2805	3412		1770	1583
Peak-hour factor, PHF	0.89	0.89	0.98	0.98	0.83	0.83
Adj. Flow (vph)	92	479	468	147	142	66
RTOR Reduction (vph)	0	0	75	0	0	40
Lane Group Flow (vph)	0	571	540	0	142	26
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		16.0	16.0		16.0	16.0
Effective Green, g (s)		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.40	0.40		0.40	0.40
Clearance Time (s)		4.0	4.0		4.0	4.0
Lane Grp Cap (vph)		1122	1365		708	633
v/s Ratio Prot			0.16		c0.08	
v/s Ratio Perm		c0.20				0.02
v/c Ratio		0.51	0.40		0.20	0.04
Uniform Delay, d1		9.0	8.6		7.8	7.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.7	0.9		0.6	0.1
Delay (s)		10.7	9.4		8.5	7.4
Level of Service		B	A		A	A
Approach Delay (s)		10.7	9.4		8.1	
Approach LOS		B	A		A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
123: W McKinley Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	437	20	36	354	69	66	115	8	152	442	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3453		1770	3506		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3453		1770	3506		1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.81	0.81	0.81	0.86	0.86	0.86	0.89	0.89	0.89
Adj. Flow (vph)	115	553	25	44	437	85	77	134	9	171	497	222
RTOR Reduction (vph)	0	0	18	0	20	0	0	5	0	0	0	137
Lane Group Flow (vph)	115	553	7	44	502	0	77	138	0	171	497	85
Turn Type	Prot		custom	Prot			Prot			Prot		custom
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			4									6
Actuated Green, G (s)	7.0	22.4	19.3	3.9	19.3		6.1	15.2		10.2	19.3	15.2
Effective Green, g (s)	7.0	22.4	19.3	3.9	19.3		6.1	15.2		10.2	19.3	15.2
Actuated g/C Ratio	0.10	0.32	0.28	0.06	0.28		0.09	0.22		0.15	0.28	0.22
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.2	5.2	2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	178	1141	440	99	959		155	767		260	983	346
v/s Ratio Prot	c0.06	c0.16		0.02	0.15		0.04	0.04		c0.10	c0.14	
v/s Ratio Perm			0.00									0.05
v/c Ratio	0.65	0.48	0.02	0.44	0.52		0.50	0.18		0.66	0.51	0.25
Uniform Delay, d1	30.1	18.9	18.2	31.8	21.2		30.2	22.1		28.0	21.1	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.9	0.7	0.0	1.2	1.0		0.9	0.3		4.5	0.9	0.8
Delay (s)	36.0	19.6	18.2	32.9	22.3		31.1	22.3		32.5	22.0	23.3
Level of Service	D	B	B	C	C		C	C		C	C	C
Approach Delay (s)		22.3			23.1			25.4			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
123: W McKinley Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	418	28	32	441	93	209	359	19	148	184	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3447		1770	3512		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3447		1770	3512		1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.87	0.87	0.87	0.77	0.77	0.77	0.87	0.87	0.87
Adj. Flow (vph)	266	504	34	37	507	107	271	466	25	170	211	176
RTOR Reduction (vph)	0	0	24	0	21	0	0	5	0	0	0	137
Lane Group Flow (vph)	266	504	10	37	593	0	271	486	0	170	211	39
Turn Type	Prot		custom	Prot			Prot			Prot		custom
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			4									6
Actuated Green, G (s)	11.1	29.8	22.8	4.1	22.8		11.1	17.5		10.3	16.7	17.5
Effective Green, g (s)	11.1	29.8	22.8	4.1	22.8		11.1	17.5		10.3	16.7	17.5
Actuated g/C Ratio	0.14	0.37	0.29	0.05	0.29		0.14	0.22		0.13	0.21	0.22
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.9		4.0	4.9	4.9
Vehicle Extension (s)	2.0	5.2	5.2	2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	247	1327	454	91	989		247	773		229	743	348
v/s Ratio Prot	c0.15	0.14		0.02	c0.17		c0.15	c0.14		0.10	0.06	
v/s Ratio Perm			0.01									0.02
v/c Ratio	1.08	0.38	0.02	0.41	0.60		1.10	0.63		0.74	0.28	0.11
Uniform Delay, d1	34.2	18.1	20.3	36.5	24.4		34.2	28.1		33.3	26.4	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	79.2	0.4	0.0	1.1	1.6		85.7	2.4		10.8	0.5	0.3
Delay (s)	113.4	18.5	20.4	37.6	26.0		119.9	30.4		44.1	26.8	25.1
Level of Service	F	B	C	D	C		F	C		D	C	C
Approach Delay (s)		50.0			26.6			62.3			31.6	
Approach LOS		D			C			E			C	

Intersection Summary			
HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
124: W Olive Ave & SR 99 Southbound Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	303	281	112	276	0	0	0	0	73	0	78
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.86	0.86	0.86	0.92	0.92	0.92	0.91	0.91	0.91
Hourly flow rate (vph)	0	404	375	130	321	0	0	0	0	80	0	86
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	321			779			1012	1173	389	783	1360	160
vC1, stage 1 conf vol							591	591		581	581	
vC2, stage 2 conf vol							421	581		202	779	
vCu, unblocked vol	321			779			1012	1173	389	783	1360	160
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			100	100	100	78	100	90
cM capacity (veh/h)	1236			834			343	345	609	372	246	856

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	269	509	130	160	160	166
Volume Left	0	0	130	0	0	80
Volume Right	0	375	0	0	0	86
cSH	1700	1700	834	1700	1700	526
Volume to Capacity	0.16	0.30	0.16	0.09	0.09	0.32
Queue Length 95th (ft)	0	0	14	0	0	34
Control Delay (s)	0.0	0.0	10.1	0.0	0.0	15.0
Lane LOS			B			B
Approach Delay (s)	0.0		2.9			15.0
Approach LOS						B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
124: W Olive Ave & SR 99 Southbound Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	385	160	199	454	0	0	0	0	73	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	0	464	193	231	528	0	0	0	0	97	0	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			657			1287	1551	328	1223	1647	264
vC1, stage 1 conf vol							560	560		991	991	
vC2, stage 2 conf vol							727	991		232	657	
vCu, unblocked vol	528			657			1287	1551	328	1223	1647	264
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			100	100	100	49	100	81
cM capacity (veh/h)	1035			927			213	222	667	190	177	734

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	309	347	231	264	264	236
Volume Left	0	0	231	0	0	97
Volume Right	0	193	0	0	0	139
cSH	1700	1700	927	1700	1700	337
Volume to Capacity	0.18	0.20	0.25	0.16	0.16	0.70
Queue Length 95th (ft)	0	0	25	0	0	126
Control Delay (s)	0.0	0.0	10.2	0.0	0.0	37.3
Lane LOS			B			E
Approach Delay (s)	0.0		3.1			37.3
Approach LOS						E

Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	69	381	0	0	482	70	134	0	176	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.87	0.87	0.87	0.88	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	82	454	0	0	554	80	152	0	200	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)									18		
Median type		None			TWLTL						
Median storage veh)					2						
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	634			454			895	1252	227	985	1212
vC1, stage 1 conf vol							618	618		594	594
vC2, stage 2 conf vol							277	634		391	618
vCu, unblocked vol	634			454			895	1252	227	985	1212
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	91			100			59	100	74	100	100
cM capacity (veh/h)	945			1103			373	318	776	326	354

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	82	227	227	369	265	352
Volume Left	82	0	0	0	0	152
Volume Right	0	0	0	0	80	200
cSH	945	1700	1700	1700	1700	862
Volume to Capacity	0.09	0.13	0.13	0.22	0.16	0.41
Queue Length 95th (ft)	7	0	0	0	0	50
Control Delay (s)	9.2	0.0	0.0	0.0	0.0	15.5
Lane LOS	A					C
Approach Delay (s)	1.4			0.0		15.5
Approach LOS						C

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	47	313	0	0	290	26	110	0	169	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	57	382	0	0	309	28	122	0	188	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)									18		
Median type		None			TWLTL						
Median storage veh)					2						
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	336			382			651	833	191	628	819
vC1, stage 1 conf vol							496	496		322	322
vC2, stage 2 conf vol							154	336		305	496
vCu, unblocked vol	336			382			651	833	191	628	819
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)							6.5	5.5		6.5	5.5
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	95			100			74	100	77	100	100
cM capacity (veh/h)	1220			1173			474	449	819	448	463

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	57	191	191	206	130	310
Volume Left	57	0	0	0	0	122
Volume Right	0	0	0	0	28	188
cSH	1220	1700	1700	1700	1700	1202
Volume to Capacity	0.05	0.11	0.11	0.12	0.08	0.26
Queue Length 95th (ft)	4	0	0	0	0	26
Control Delay (s)	8.1	0.0	0.0	0.0	0.0	12.5
Lane LOS	A					B
Approach Delay (s)	1.1			0.0		12.5
Approach LOS						B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
126: W Olive Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	399	1	1	268	4	2	0	1	4	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.98	0.98	0.98	0.38	0.38	0.38	0.71	0.71	0.71
Hourly flow rate (vph)	51	487	1	1	273	4	5	0	3	6	0	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	278			488			779	869	244	626	868	139
vC1, stage 1 conf vol							590	590		278	278	
vC2, stage 2 conf vol							189	280		348	590	
vCu, unblocked vol	278			488			779	869	244	626	868	139
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			99	100	100	99	100	94
cM capacity (veh/h)	1282			1072			413	430	757	538	435	884

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	51	324	163	1	182	95	8	6	51
Volume Left	51	0	0	1	0	0	5	6	0
Volume Right	0	0	1	0	0	4	3	0	51
cSH	1282	1700	1700	1072	1700	1700	486	538	884
Volume to Capacity	0.04	0.19	0.10	0.00	0.11	0.06	0.02	0.01	0.06
Queue Length 95th (ft)	3	0	0	0	0	0	1	1	5
Control Delay (s)	7.9	0.0	0.0	8.4	0.0	0.0	12.5	11.8	9.3
Lane LOS	A			A			B	B	A
Approach Delay (s)	0.8			0.0			12.5	9.6	
Approach LOS							B	A	

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	27.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
126: W Olive Ave & N West Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	475	1	2	465	6	5	0	2	7	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.86	0.86	0.86	0.58	0.58	0.58	0.78	0.78	0.78
Hourly flow rate (vph)	49	522	1	2	541	7	9	0	3	9	0	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	548			523			948	1174	262	912	1171	274
vC1, stage 1 conf vol							621	621		549	549	
vC2, stage 2 conf vol							326	552		363	622	
vCu, unblocked vol	548			523			948	1174	262	912	1171	274
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	100	100	98	100	93
cM capacity (veh/h)	1018			1040			368	357	737	415	370	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	49	348	175	2	360	187	12	9	51
Volume Left	49	0	0	2	0	0	9	9	0
Volume Right	0	0	1	0	0	7	3	0	51
cSH	1018	1700	1700	1040	1700	1700	429	415	724
Volume to Capacity	0.05	0.20	0.10	0.00	0.21	0.11	0.03	0.02	0.07
Queue Length 95th (ft)	4	0	0	0	0	0	2	2	6
Control Delay (s)	8.7	0.0	0.0	8.5	0.0	0.0	13.6	13.9	10.4
Lane LOS	A			A			B	B	B
Approach Delay (s)	0.8			0.0			13.6	10.9	
Approach LOS							B	B	

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
129: W Belmont Avenue & SR 99 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	151	189	103	196	0	99	7	49	10	0	20
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		0%		
Peak Hour Factor	0.82	0.82	0.82	0.81	0.81	0.81	0.72	0.72	0.72	0.63	0.63	0.63
Hourly flow rate (vph)	0	184	230	127	242	0	138	10	68	16	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	242			415			620	911	121	680	796	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			415			620	911	121	680	796	207
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			58	96	93	94	100	96
cM capacity (veh/h)	1322			1141			327	242	908	277	283	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	123	292	208	161	215	48
Volume Left	0	0	127	0	138	16
Volume Right	0	230	0	0	68	32
cSH	1700	1700	1141	1700	402	490
Volume to Capacity	0.07	0.17	0.11	0.09	0.54	0.10
Queue Length 95th (ft)	0	0	9	0	77	8
Control Delay (s)	0.0	0.0	5.6	0.0	23.8	13.1
Lane LOS			A		C	B
Approach Delay (s)	0.0		3.2		23.8	13.1
Approach LOS					C	B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
129: W Belmont Avenue & SR 99 SB Off-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	280	268	182	362	0	74	4	63	17	0	16
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		0%		
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.89	0.89	0.89	0.75	0.75	0.75
Hourly flow rate (vph)	0	298	285	219	436	0	83	4	71	23	0	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	436			583			1045	1458	218	1099	1315	291
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	436			583			1045	1458	218	1099	1315	291
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			78			43	96	91	81	100	97
cM capacity (veh/h)	1120			987			147	100	786	122	122	705

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	199	384	365	291	158	44
Volume Left	0	0	219	0	83	23
Volume Right	0	285	0	0	71	21
cSH	1700	1700	987	1700	226	203
Volume to Capacity	0.12	0.23	0.22	0.17	0.70	0.22
Queue Length 95th (ft)	0	0	21	0	114	20
Control Delay (s)	0.0	0.0	6.8	0.0	51.3	27.5
Lane LOS			A		F	D
Approach Delay (s)	0.0		3.8		51.3	27.5
Approach LOS					F	D

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	40	228	0	0	161	36	136	0	157	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.81	0.81	0.81	0.92	0.92
Hourly flow rate (vph)	42	238	0	0	177	40	168	0	194	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None			None						
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	216			238			409	537	119	399	518
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	216			238			409	537	119	399	518
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	97			100			67	100	79	100	100
cM capacity (veh/h)	1351			1327			514	435	911	412	446

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	121	158	118	99	168	194
Volume Left	42	0	0	0	168	0
Volume Right	0	0	0	40	0	194
cSH	1351	1700	1700	1700	514	911
Volume to Capacity	0.03	0.09	0.07	0.06	0.33	0.21
Queue Length 95th (ft)	2	0	0	0	35	20
Control Delay (s)	2.8	0.0	0.0	0.0	15.4	10.0
Lane LOS	A				C	B
Approach Delay (s)	1.2		0.0		12.5	
Approach LOS					B	

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	30.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
130: W Belmont Avenue & SR 99 NB On-Ramp

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	83	270	0	0	370	92	203	0	128	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.81	0.81	0.81	0.84	0.84	0.84	0.92	0.92
Hourly flow rate (vph)	92	300	0	0	457	114	242	0	152	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None			None						
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	570			300			713	1055	150	848	998
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	570			300			713	1055	150	848	998
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	91			100			19	100	82	100	100
cM capacity (veh/h)	998			1258			297	204	870	195	220

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	192	200	305	266	242	152
Volume Left	92	0	0	0	242	0
Volume Right	0	0	0	114	0	152
cSH	998	1700	1700	1700	297	870
Volume to Capacity	0.09	0.12	0.18	0.16	0.81	0.18
Queue Length 95th (ft)	8	0	0	0	167	16
Control Delay (s)	4.8	0.0	0.0	0.0	54.1	10.0
Lane LOS	A				F	B
Approach Delay (s)	2.3		0.0		37.1	
Approach LOS					E	

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	260	57	8	256	55	30	19	7	34	76	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97			0.98			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1813			1784			1772	
Flt Permitted	0.47	1.00	1.00	0.56	1.00			0.74			0.90	
Satd. Flow (perm)	874	1863	1583	1043	1813			1359			1620	
Peak-hour factor, PHF	0.78	0.78	0.78	0.70	0.70	0.70	0.77	0.77	0.77	0.78	0.78	0.78
Adj. Flow (vph)	31	333	73	11	366	79	39	25	9	44	97	55
RTOR Reduction (vph)	0	0	45	0	17	0	0	7	0	0	40	0
Lane Group Flow (vph)	31	333	28	11	428	0	0	66	0	0	156	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.8	8.8	8.8	8.8	8.8			6.1			6.1	
Effective Green, g (s)	8.8	8.8	8.8	8.8	8.8			6.1			6.1	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38			0.27			0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	336	716	608	401	697			362			432	
v/s Ratio Prot		0.18			c0.24							
v/s Ratio Perm	0.04		0.02	0.01				0.05			c0.10	
v/c Ratio	0.09	0.47	0.05	0.03	0.61			0.18			0.36	
Uniform Delay, d1	4.5	5.3	4.4	4.4	5.7			6.5			6.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.5	0.0	0.0	1.6			0.2			0.5	
Delay (s)	4.6	5.8	4.5	4.4	7.3			6.7			7.3	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		5.5			7.2			6.7			7.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	22.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
132: Olive Ave & Fruit Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	368	40	14	294	70	103	91	17	50	21	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.97			0.99			0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1863	1583	1770	1809			1799			1737	
Flt Permitted	0.47	1.00	1.00	0.48	1.00			0.78			0.78	
Satd. Flow (perm)	869	1863	1583	903	1809			1434			1395	
Peak-hour factor, PHF	0.91	0.91	0.91	0.87	0.87	0.87	0.81	0.81	0.81	0.80	0.80	0.80
Adj. Flow (vph)	69	404	44	16	338	80	127	112	21	62	26	45
RTOR Reduction (vph)	0	0	28	0	16	0	0	9	0	0	30	0
Lane Group Flow (vph)	69	404	16	16	402	0	0	251	0	0	103	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	9.1	9.1	9.1	9.1	9.1			8.2			8.2	
Effective Green, g (s)	9.1	9.1	9.1	9.1	9.1			8.2			8.2	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36			0.32			0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	313	670	569	325	651			465			452	
v/s Ratio Prot		0.22			c0.22							
v/s Ratio Perm	0.08		0.01	0.02				c0.18			0.07	
v/c Ratio	0.22	0.60	0.03	0.05	0.62			0.54			0.23	
Uniform Delay, d1	5.6	6.6	5.2	5.3	6.7			7.0			6.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	1.5	0.0	0.1	1.7			1.3			0.3	
Delay (s)	6.0	8.2	5.3	5.3	8.4			8.3			6.5	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		7.6			8.3			8.3			6.5	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HANFORD EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: SR 198 & 9 th Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	684	26	28	907	9	0	0	39	0	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.71	0.71	0.71	0.75	0.75	0.75
Hourly flow rate (vph)	55	777	30	32	1031	10	0	0	55	0	0	84
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1041			807			1564	2006	403	1652	2015	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1041			807			1564	2006	403	1652	2015	520
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			100	100	91	100	100	83
cM capacity (veh/h)	664			814			57	52	597	54	51	501

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	55	518	289	32	687	354	55	84
Volume Left	55	0	0	32	0	0	0	0
Volume Right	0	0	30	0	0	10	55	84
cSH	664	1700	1700	814	1700	1700	597	501
Volume to Capacity	0.08	0.30	0.17	0.04	0.40	0.21	0.09	0.17
Queue Length 95th (ft)	7	0	0	3	0	0	8	15
Control Delay (s)	10.9	0.0	0.0	9.6	0.0	0.0	11.6	13.6
Lane LOS	B			A			B	B
Approach Delay (s)	0.7			0.3			11.6	13.6
Approach LOS							B	B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: SR 198 & 9 th Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	988	28	36	704	8	0	0	42	0	0	72
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.83	0.83	0.83	0.73	0.73	0.73	0.69	0.69	0.69
Hourly flow rate (vph)	109	1029	29	43	848	10	0	0	58	0	0	104
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	858			1058			1878	2207	529	1731	2217	429
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858			1058			1878	2207	529	1731	2217	429
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			93			100	100	88	100	100	82
cM capacity (veh/h)	779			654			30	35	494	42	35	574

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	109	686	372	43	565	292	58	104
Volume Left	109	0	0	43	0	0	0	0
Volume Right	0	0	29	0	0	10	58	104
cSH	779	1700	1700	654	1700	1700	494	574
Volume to Capacity	0.14	0.40	0.22	0.07	0.33	0.17	0.12	0.18
Queue Length 95th (ft)	12	0	0	5	0	0	10	16
Control Delay (s)	10.4	0.0	0.0	10.9	0.0	0.0	13.2	12.7
Lane LOS	B			B			B	B
Approach Delay (s)	1.0			0.5			13.2	12.7
Approach LOS							B	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	38.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (veh/h)	40	0	145	0	276	0	0	390	102	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.68	0.68	0.68	0.75	0.75	0.75	0.86	0.86	0.86	0.92	0.92
Hourly flow rate (vph)	59	0	213	0	368	0	0	453	119	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)			1								
Median type					None			None			
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	881	940	368	572			368			987	881
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	881	940	368	572			368			987	881
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	78	100	69	100			100			100	100
cM capacity (veh/h)	267	264	677	1001			1191			155	286

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	272	368	572
Volume Left	59	0	0
Volume Right	213	0	119
cSH	864	1700	1700
Volume to Capacity	0.31	0.22	0.34
Queue Length 95th (ft)	34	0	0
Control Delay (s)	14.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.8	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (veh/h)	21	0	169	0	450	0	0	332	134	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.83	0.83	0.83	0.90	0.90	0.90	0.91	0.91	0.91	0.92	0.92
Hourly flow rate (vph)	25	0	204	0	500	0	0	365	147	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)			1								
Median type					None			None			
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	938	1012	500	512			500			1040	938
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	938	1012	500	512			500			1040	938
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	90	100	64	100			100			100	100
cM capacity (veh/h)	244	239	571	1053			1064			134	264

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	229	500	512
Volume Left	25	0	0
Volume Right	204	0	147
cSH	642	1700	1700
Volume to Capacity	0.36	0.29	0.30
Queue Length 95th (ft)	40	0	0
Control Delay (s)	15.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (veh/h)	110	0	91	0	273	35	0	306	0	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.78	0.78	0.78	0.83	0.83	0.83	0.92	0.92
Hourly flow rate (vph)	131	0	108	0	350	45	0	369	0	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)			1								
Median type					None			None			
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	741	764	369	369			395			795	741
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	741	764	369	369			395			795	741
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	61	100	84	100			100			100	100
cM capacity (veh/h)	332	334	677	1190			1164			256	344

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	239	395	369
Volume Left	131	0	0
Volume Right	108	45	0
cSH	519	1700	1700
Volume to Capacity	0.46	0.23	0.22
Queue Length 95th (ft)	60	0	0
Control Delay (s)	17.7	0.0	0.0
Lane LOS	C		
Approach Delay (s)	17.7	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (veh/h)	105	0	85	0	439	57	0	184	0	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92
Hourly flow rate (vph)	117	0	94	0	477	62	0	202	0	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)			1								
Median type					None			None			
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	710	741	202	202			539			758	710
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	710	741	202	202			539			758	710
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	67	100	89	100			100			100	100
cM capacity (veh/h)	348	344	839	1370			1029			287	358

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	211	539	202
Volume Left	117	0	0
Volume Right	94	62	0
cSH	551	1700	1700
Volume to Capacity	0.38	0.32	0.12
Queue Length 95th (ft)	45	0	0
Control Delay (s)	15.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	569	7	8	828	11	6	12	8	9	10	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.86	0.86	0.86	0.45	0.45	0.45
Hourly flow rate (vph)	111	654	8	9	952	13	7	14	9	20	22	222
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	964			662			2084	1864	658	1870	1861	958
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	964			662			2084	1864	658	1870	1861	958
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			99			1	77	98	49	64	29
cM capacity (veh/h)	714			926			7	61	464	39	61	312

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	111	662	9	964	30	264
Volume Left	111	0	9	0	7	20
Volume Right	0	8	0	13	9	222
cSH	714	1700	926	1700	24	167
Volume to Capacity	0.16	0.39	0.01	0.57	1.24	1.59
Queue Length 95th (ft)	14	0	1	0	94	445
Control Delay (s)	11.0	0.0	8.9	0.0	496.3	340.1
Lane LOS	B		A		F	F
Approach Delay (s)	1.6		0.1		496.3	340.1
Approach LOS					F	F

Intersection Summary			
Average Delay	52.0		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	989	13	5	786	1	7	3	2	4	3	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.46	0.46	0.46	0.65	0.65	0.65
Hourly flow rate (vph)	39	1075	14	6	925	1	15	7	4	6	5	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	926			1089			2131	2098	1082	2098	2104	925
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	926			1089			2131	2098	1082	2098	2104	925
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			99			47	87	98	81	90	90
cM capacity (veh/h)	738			641			29	49	264	32	48	326

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	39	1089	6	926	26	43
Volume Left	39	0	6	0	15	6
Volume Right	0	14	0	1	4	32
cSH	738	1700	641	1700	38	111
Volume to Capacity	0.05	0.64	0.01	0.54	0.68	0.39
Queue Length 95th (ft)	4	0	1	0	61	40
Control Delay (s)	10.1	0.0	10.7	0.0	211.9	56.5
Lane LOS	B		B		F	F
Approach Delay (s)	0.4		0.1		211.9	56.5
Approach LOS					F	F

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	556	4	4	791	4	6	5	6	4	8	62
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.91	0.91	0.91	0.44	0.44	0.44	0.71	0.71	0.71
Hourly flow rate (vph)	35	654	5	4	869	4	14	11	14	6	11	87
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	874			659			1698	1609	656	1624	1610	871
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	874			659			1698	1609	656	1624	1610	871
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			72	89	97	92	89	75
cM capacity (veh/h)	772			929			48	99	465	70	99	350

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	35	659	4	874	39	104
Volume Left	35	0	4	0	14	6
Volume Right	0	5	0	4	14	87
cSH	772	1700	929	1700	90	235
Volume to Capacity	0.05	0.39	0.00	0.51	0.43	0.44
Queue Length 95th (ft)	4	0	0	0	44	53
Control Delay (s)	9.9	0.0	8.9	0.0	71.6	32.0
Lane LOS	A		A		F	D
Approach Delay (s)	0.5		0.0		71.6	32.0
Approach LOS					F	D

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	102	933	9	3	703	10	0	10	4	2	3	51
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.79	0.79	0.79	0.88	0.88	0.88	0.69	0.69	0.69
Hourly flow rate (vph)	105	962	9	4	890	13	0	11	5	3	4	74
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	903			971			2150	2087	966	2086	2085	896
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	903			971			2150	2087	966	2086	2085	896
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			99			100	75	99	89	90	78
cM capacity (veh/h)	753			710			22	45	309	27	45	339

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	105	971	4	903	16	81
Volume Left	105	0	4	0	0	3
Volume Right	0	9	0	13	5	74
cSH	753	1700	710	1700	60	193
Volume to Capacity	0.14	0.57	0.01	0.53	0.27	0.42
Queue Length 95th (ft)	12	0	0	0	23	48
Control Delay (s)	10.6	0.0	10.1	0.0	85.8	36.4
Lane LOS	B		B		F	E
Approach Delay (s)	1.0		0.0		85.8	36.4
Approach LOS					F	E

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	539	6	5	780	4	6	3	3	2	7	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.50	0.50	0.50	0.65	0.65	0.65
Hourly flow rate (vph)	5	612	7	5	857	4	12	6	6	3	11	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	862			619			1528	1498	616	1504	1499	859
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	862			619			1528	1498	616	1504	1499	859
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			85	95	99	97	91	92
cM capacity (veh/h)	780			961			82	121	491	94	121	356

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	624	867	24	42
Volume Left	5	5	12	3
Volume Right	7	4	6	28
cSH	780	961	115	208
Volume to Capacity	0.01	0.01	0.21	0.20
Queue Length 95th (ft)	0	0	19	18
Control Delay (s)	0.2	0.2	44.4	26.6
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.2	44.4	26.6
Approach LOS			E	D

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	21	888	10	2	690	8	3	7	2	3	6	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.79	0.79	0.79	0.63	0.63	0.63	0.57	0.57	0.57
Hourly flow rate (vph)	22	935	11	3	873	10	5	11	3	5	11	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	884			945			1901	1873	940	1876	1873	878
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	884			945			1901	1873	940	1876	1873	878
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			89	84	99	89	85	92
cM capacity (veh/h)	766			726			42	70	320	46	70	347

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	967	886	19	44
Volume Left	22	3	5	5
Volume Right	11	10	3	28
cSH	766	726	67	127
Volume to Capacity	0.03	0.00	0.28	0.35
Queue Length 95th (ft)	2	0	25	35
Control Delay (s)	0.9	0.1	78.8	47.7
Lane LOS	A	A	F	E
Approach Delay (s)	0.9	0.1	78.8	47.7
Approach LOS			F	E

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	24	66	107	18	20	65	231	189	18	471	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.89	0.89	0.89	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	17	30	81	120	20	22	75	266	217	21	541	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1038	1223	549	1121	1122	374	557			483		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1038	1223	549	1121	1122	374	557			483		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	82	85	4	89	97	93			98		
cM capacity (veh/h)	172	163	535	125	187	672	1013			1080		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	128	163	75	483	21	557
Volume Left	17	120	75	0	21	0
Volume Right	81	22	0	217	0	16
cSH	296	147	1013	1700	1080	1700
Volume to Capacity	0.43	1.11	0.07	0.28	0.02	0.33
Queue Length 95th (ft)	52	221	6	0	1	0
Control Delay (s)	26.2	166.1	8.8	0.0	8.4	0.0
Lane LOS	D	F	A		A	
Approach Delay (s)	26.2	166.1	1.2		0.3	
Approach LOS	D	F				

Intersection Summary			
Average Delay	21.9		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	18	71	175	27	39	96	469	112	13	235	38
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.76	0.76	0.76	0.94	0.94	0.94	0.82	0.82	0.82
Hourly flow rate (vph)	32	22	87	230	36	51	102	499	119	16	287	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1114	1164	310	1092	1127	559	333			618		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1114	1164	310	1092	1127	559	333			618		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	87	88	0	81	90	92			98		
cM capacity (veh/h)	132	175	730	142	184	529	1226			962		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	140	317	102	618	16	333
Volume Left	32	230	102	0	16	0
Volume Right	87	51	0	119	0	46
cSH	290	166	1226	1700	962	1700
Volume to Capacity	0.48	1.91	0.08	0.36	0.02	0.20
Queue Length 95th (ft)	62	598	7	0	1	0
Control Delay (s)	28.5	479.6	8.2	0.0	8.8	0.0
Lane LOS	D	F	A		A	
Approach Delay (s)	28.5	479.6	1.2		0.4	
Approach LOS	D	F				

Intersection Summary				
Average Delay	102.9			
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	153	58	77	69	34	39	178	43	118	316	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.95		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1786		1770	1771		1770	1808		1770	1859	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1786		1770	1771		1770	1808		1770	1859	
Peak-hour factor, PHF	0.68	0.68	0.68	0.77	0.77	0.77	0.90	0.90	0.90	0.75	0.75	0.75
Adj. Flow (vph)	7	225	85	100	90	44	43	198	48	157	421	5
RTOR Reduction (vph)	0	16	0	0	18	0	0	10	0	0	1	0
Lane Group Flow (vph)	7	294	0	100	116	0	43	236	0	157	425	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	1.1	17.0		7.3	23.2		4.2	17.0		8.8	21.6	
Effective Green, g (s)	1.1	17.0		7.3	23.2		4.2	17.0		8.8	21.6	
Actuated g/C Ratio	0.02	0.26		0.11	0.35		0.06	0.26		0.13	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	29	459		195	622		112	465		236	607	
v/s Ratio Prot	0.00	c0.16		c0.06	0.07		0.02	0.13		c0.09	c0.23	
v/s Ratio Perm												
v/c Ratio	0.24	0.64		0.51	0.19		0.38	0.51		0.67	0.70	
Uniform Delay, d1	32.1	21.8		27.7	14.9		29.7	21.0		27.2	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	3.1		2.3	0.1		2.2	0.9		6.9	3.7	
Delay (s)	36.4	24.9		30.0	15.0		31.9	21.8		34.1	23.1	
Level of Service	D	C		C	B		C	C		C	C	
Approach Delay (s)		25.1			21.4			23.3			26.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	73	37	67	86	46	109	377	52	43	183	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.95		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1769		1770	1765		1770	1829		1770	1857	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1769		1770	1765		1770	1829		1770	1857	
Peak-hour factor, PHF	0.71	0.71	0.71	0.85	0.85	0.85	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	6	103	52	79	101	54	121	419	58	46	197	4
RTOR Reduction (vph)	0	23	0	0	23	0	0	5	0	0	1	0
Lane Group Flow (vph)	6	132	0	79	132	0	121	472	0	46	200	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	0.9	9.0		4.5	12.6		7.4	23.3		2.6	18.5	
Effective Green, g (s)	0.9	9.0		4.5	12.6		7.4	23.3		2.6	18.5	
Actuated g/C Ratio	0.02	0.16		0.08	0.23		0.13	0.42		0.05	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	29	287		144	401		236	769		83	620	
v/s Ratio Prot	0.00	c0.07		c0.04	c0.07		c0.07	c0.26		0.03	0.11	
v/s Ratio Perm												
v/c Ratio	0.21	0.46		0.55	0.33		0.51	0.61		0.55	0.32	
Uniform Delay, d1	26.9	21.0		24.5	17.9		22.3	12.5		25.8	13.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	1.2		4.2	0.5		1.9	1.5		7.8	0.3	
Delay (s)	30.4	22.2		28.7	18.4		24.2	14.0		33.6	14.1	
Level of Service	C	C		C	B		C	B		C	B	
Approach Delay (s)		22.5			21.8			16.1			17.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HANFORD WEST EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: Hanford Armona Rd & 14th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	28	70	17	69	53	55	17	98	65	57	147	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.65	0.65	0.65	0.93	0.93	0.93	0.71	0.71	0.71
Hourly flow rate (vph)	31	78	19	106	82	85	18	105	70	80	207	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	166			97			638	528	87	608	495	124
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166			97			638	528	87	608	495	124
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			93			92	75	93	72	52	95
cM capacity (veh/h)	1412			1497			215	414	971	284	432	927

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	128	272	194	337
Volume Left	31	106	18	80
Volume Right	19	85	70	49
cSH	1412	1497	471	413
Volume to Capacity	0.02	0.07	0.41	0.82
Queue Length 95th (ft)	2	6	50	186
Control Delay (s)	2.0	3.3	17.9	42.3
Lane LOS	A	A	C	E
Approach Delay (s)	2.0	3.3	17.9	42.3
Approach LOS			C	E

Intersection Summary			
Average Delay	20.3		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Hanford Armona Rd & 14th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	16	87	29	61	71	73	32	182	35	107	112	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.89	0.89	0.89	0.91	0.91	0.91	0.80	0.80	0.80
Hourly flow rate (vph)	24	132	44	69	80	82	35	200	38	134	140	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	162			176			554	501	154	599	482	121
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	162			176			554	501	154	599	482	121
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			89	55	96	45	69	97
cM capacity (veh/h)	1417			1401			313	441	892	244	452	931

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	200	230	274	298
Volume Left	24	69	35	134
Volume Right	44	82	38	24
cSH	1417	1401	449	337
Volume to Capacity	0.02	0.05	0.61	0.88
Queue Length 95th (ft)	1	4	99	210
Control Delay (s)	1.0	2.6	24.7	59.8
Lane LOS	A	A	C	F
Approach Delay (s)	1.0	2.6	24.7	59.8
Approach LOS			C	F

Intersection Summary			
Average Delay	25.3		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: SR 198 WB On-ramp & 14 th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	58	1	37	25	174	0	0	161	54
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.73	0.73	0.73	0.84	0.84	0.84	0.71	0.71	0.71
Hourly flow rate (vph)	0	0	0	79	1	51	30	207	0	0	227	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	557	531	265	531	569	207	303			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	557	531	265	531	569	207	303			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	82	100	94	98			100		
cM capacity (veh/h)	405	443	774	450	421	833	1258			1364		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	132	237	303
Volume Left	79	30	0
Volume Right	51	0	76
cSH	732	1258	1700
Volume to Capacity	0.18	0.02	0.18
Queue Length 95th (ft)	16	2	0
Control Delay (s)	12.8	1.2	0.0
Lane LOS	B	A	
Approach Delay (s)	12.8	1.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: SR 198 WB On-ramp & 14 th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	2	80	26	226	0	0	176	76
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.89	0.89	0.89	0.82	0.82	0.82
Hourly flow rate (vph)	0	0	0	96	2	86	29	254	0	0	215	93
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	617	573	261	573	620	254	307			254		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	617	573	261	573	620	254	307			254		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	77	99	89	98			100		
cM capacity (veh/h)	350	419	778	422	395	785	1253			1311		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	184	283	307
Volume Left	96	29	0
Volume Right	86	0	93
cSH	793	1253	1700
Volume to Capacity	0.23	0.02	0.18
Queue Length 95th (ft)	22	2	0
Control Delay (s)	13.3	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.3	1.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	77	0	20	0	0	0	0	119	98	73	138	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.92	0.92	0.92	0.81	0.81	0.81	0.78	0.78	0.78
Hourly flow rate (vph)	105	0	27	0	0	0	0	147	121	94	177	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	572	632	177	585	572	207	177			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572	632	177	585	572	207	177			268		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	100	97	100	100	100	100			93		
cM capacity (veh/h)	407	369	866	386	399	833	1399			1296		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	133	268	271
Volume Left	105	0	94
Volume Right	27	121	0
cSH	513	1700	1296
Volume to Capacity	0.26	0.16	0.07
Queue Length 95th (ft)	26	0	6
Control Delay (s)	15.3	0.0	3.2
Lane LOS	C		A
Approach Delay (s)	15.3	0.0	3.2
Approach LOS	C		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	0	27	0	0	0	0	174	88	65	233	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.92	0.92	0.92	0.87	0.87	0.87	0.86	0.86	0.86
Hourly flow rate (vph)	119	0	39	0	0	0	0	200	101	76	271	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	673	723	271	692	673	251	271			301		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673	723	271	692	673	251	271			301		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	100	95	100	100	100	100			94		
cM capacity (veh/h)	352	331	768	324	354	788	1292			1260		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	158	301	347
Volume Left	119	0	76
Volume Right	39	101	0
cSH	468	1700	1260
Volume to Capacity	0.34	0.18	0.06
Queue Length 95th (ft)	37	0	5
Control Delay (s)	17.8	0.0	2.2
Lane LOS	C		A
Approach Delay (s)	17.8	0.0	2.2
Approach LOS	C		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	33	249	9	54	91	47	8	189	62	51	158	10
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.75	0.75	0.75	0.64	0.64	0.64
Hourly flow rate (vph)	36	274	10	68	115	59	11	252	83	80	247	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	320	243	345	342
Volume Left (vph)	36	68	11	80
Volume Right (vph)	10	59	83	16
Hadj (s)	0.04	-0.06	-0.10	0.05
Departure Headway (s)	7.1	7.2	6.8	6.9
Degree Utilization, x	0.63	0.49	0.65	0.66
Capacity (veh/h)	466	434	484	479
Control Delay (s)	21.2	16.9	21.6	22.4
Approach Delay (s)	21.2	16.9	21.6	22.4
Approach LOS	C	C	C	C

Intersection Summary			
Delay	20.8		
HCM Level of Service	C		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	205	6	87	314	43	7	190	116	29	90	10
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.89	0.89	0.89	0.76	0.76	0.76
Hourly flow rate (vph)	12	225	7	100	361	49	8	213	130	38	118	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	244	510	352	170
Volume Left (vph)	12	100	8	38
Volume Right (vph)	7	49	130	13
Hadj (s)	0.03	0.02	-0.18	0.03
Departure Headway (s)	7.1	6.4	6.8	7.6
Degree Utilization, x	0.48	0.91	0.66	0.36
Capacity (veh/h)	472	543	506	427
Control Delay (s)	16.5	44.9	22.0	14.7
Approach Delay (s)	16.5	44.9	22.0	14.7
Approach LOS	C	E	C	B

Intersection Summary				
Delay		29.2		
HCM Level of Service		D		
Intersection Capacity Utilization		67.5%	ICU Level of Service	C
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	64	24	22	375	261	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.82	0.82	0.68	0.68
Hourly flow rate (vph)	81	30	27	457	384	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1082		
pX, platoon unblocked						
vC, conflicting volume	922	411	438			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	922	411	438			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	95	98			
cM capacity (veh/h)	293	641	1122			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	111	484	438
Volume Left	81	27	0
Volume Right	30	0	54
cSH	344	1122	1700
Volume to Capacity	0.32	0.02	0.26
Queue Length 95th (ft)	34	2	0
Control Delay (s)	20.4	0.7	0.0
Lane LOS	C	A	
Approach Delay (s)	20.4	0.7	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	64	23	70	338	324	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.85	0.85	0.96	0.96
Hourly flow rate (vph)	70	25	82	398	338	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1082		
pX, platoon unblocked						
vC, conflicting volume	924	362	386			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	924	362	386			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	75	96	93			
cM capacity (veh/h)	278	683	1172			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	96	480	386
Volume Left	70	82	0
Volume Right	25	0	49
cSH	330	1172	1700
Volume to Capacity	0.29	0.07	0.23
Queue Length 95th (ft)	29	6	0
Control Delay (s)	20.3	2.1	0.0
Lane LOS	C	A	
Approach Delay (s)	20.3	2.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	7	13	380	7	10	275
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.71	0.71	0.84	0.84	0.78	0.78
Hourly flow rate (vph)	10	18	452	8	13	353
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			390			
pX, platoon unblocked	0.98	0.98			0.98	
vC, conflicting volume	835	457			461	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	823	439			443	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	333	608			1098	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	461	365
Volume Left	10	0	13
Volume Right	18	8	0
cSH	472	1700	1098
Volume to Capacity	0.06	0.27	0.01
Queue Length 95th (ft)	5	0	1
Control Delay (s)	13.1	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	13.1	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	21	28	381	7	5	339
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.85	0.85	0.92	0.92
Hourly flow rate (vph)	24	32	448	8	5	368
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			390			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	832	452			456	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	799	401			405	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	95			100	
cM capacity (veh/h)	336	619			1100	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	56	456	374
Volume Left	24	0	5
Volume Right	32	8	0
cSH	455	1700	1100
Volume to Capacity	0.12	0.27	0.00
Queue Length 95th (ft)	10	0	0
Control Delay (s)	14.0	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBL2	NBT	SBT	SBR	SBR2
Lane Configurations												
Volume (vph)	83	0	163	3	23	23	143	56	156	116	84	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0		4.0	4.0	4.0		
Lane Util. Factor		1.00				1.00		0.95	0.95	1.00		
Frt		0.91				0.90		1.00	1.00	0.92		
Flt Protected		0.98				0.99		0.95	1.00	1.00		
Satd. Flow (prot)		1667				1663		1681	1767	1714		
Flt Permitted		0.98				0.99		0.95	0.99	1.00		
Satd. Flow (perm)		1667				1663		1681	1753	1714		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.73	0.73	0.73	0.92	0.92	0.76	0.76	0.76
Adj. Flow (vph)	91	0	179	3	32	32	196	61	170	153	111	109
RTOR Reduction (vph)	0	1	0	0	0	169	0	0	0	19	0	0
Lane Group Flow (vph)	0	272	0	0	0	91	0	55	176	354	0	0
Turn Type	Split				Split			Prot				
Protected Phases	4	4			3	3		5	2	6		
Permitted Phases												
Actuated Green, G (s)		13.8				8.7		2.3	28.0	21.7		
Effective Green, g (s)		13.8				8.7		2.3	28.0	21.7		
Actuated g/C Ratio		0.22				0.14		0.04	0.45	0.35		
Clearance Time (s)		4.0				4.0		4.0	4.0	4.0		
Vehicle Extension (s)		3.0				3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)		368				231		62	786	595		
v/s Ratio Prot		c0.16				c0.05		c0.03	0.01	c0.21		
v/s Ratio Perm									0.09			
v/c Ratio		0.74				0.40		0.89	0.22	0.60		
Uniform Delay, d1		22.7				24.5		30.0	10.6	16.8		
Progression Factor		1.00				1.00		1.00	1.00	1.00		
Incremental Delay, d2		7.6				1.1		74.6	0.1	1.6		
Delay (s)		30.3				25.6		104.6	10.7	18.4		
Level of Service		C				C		F	B	B		
Approach Delay (s)		30.3				25.6			33.1	18.4		
Approach LOS		C				C			C	B		

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBL2	NBL	NBT	SBT	SBR
Lane Configurations												
Volume (vph)	45	0	207	15	31	31	119	67	89	216	176	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00				1.00		0.95		0.95	1.00	
Frt		0.89				0.91		1.00		1.00	0.93	
Flt Protected		0.99				0.99		0.95		0.98	1.00	
Satd. Flow (prot)		1640				1683		1681		1743	1733	
Flt Permitted		0.99				0.99		0.95		0.52	1.00	
Satd. Flow (perm)		1640				1683		1681		929	1733	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.79	0.79	0.79	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	0	241	17	39	39	151	73	97	235	191	93
RTOR Reduction (vph)	0	2	0	0	0	93	0	0	0	0	16	0
Lane Group Flow (vph)	0	308	0	0	0	136	0	66	0	339	378	0
Turn Type	Split				Split			Prot	Perm			
Protected Phases	4	4			3	3		5		2	6	
Permitted Phases									2			
Actuated Green, G (s)		15.9				10.6		3.8		34.6	26.8	
Effective Green, g (s)		15.9				10.6		3.8		34.6	26.8	
Actuated g/C Ratio		0.22				0.15		0.05		0.47	0.37	
Clearance Time (s)		4.0				4.0		4.0		4.0	4.0	
Vehicle Extension (s)		3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		357				244		87		440	635	
v/s Ratio Prot		c0.19				c0.08		0.04			0.22	
v/s Ratio Perm										c0.36		
v/c Ratio		0.86				0.56		0.76		0.77	0.59	
Uniform Delay, d1		27.5				29.1		34.2		16.0	18.7	
Progression Factor		1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2		18.7				2.7		30.9		8.1	1.5	
Delay (s)		46.3				31.8		65.1		24.1	20.3	
Level of Service		D				C		E		C	C	
Approach Delay (s)		46.3				31.8				30.8	20.3	
Approach LOS		D				C				C	C	

Intersection Summary

HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2
Lane Configurations	
Volume (vph)	101
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	110
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Volume (vph)	74	36	15	92	0	90	10	44	9	21	157	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frt		0.98			0.93			0.95			1.00	
Flt Protected		0.97			0.98			1.00			0.95	
Satd. Flow (prot)		1780			1691			1761			1681	
Flt Permitted		0.97			0.98			1.00			0.95	
Satd. Flow (perm)		1780			1691			1761			1681	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.64	0.64	0.64	0.92	0.92
Adj. Flow (vph)	96	47	19	100	0	98	11	69	14	33	171	127
RTOR Reduction (vph)	0	8	0	0	3	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	154	0	0	206	0	0	94	0	0	154	0
Turn Type	Split			Split							Prot	Perm
Protected Phases	3	3		4	4			2			1	
Permitted Phases												6
Actuated Green, G (s)		8.2			11.7			9.7			6.5	
Effective Green, g (s)		8.2			11.7			9.7			6.5	
Actuated g/C Ratio		0.16			0.22			0.19			0.12	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		280			380			328			210	
v/s Ratio Prot		c0.09			c0.12			0.05			0.09	
v/s Ratio Perm												
v/c Ratio		0.55			0.54			0.29			0.73	
Uniform Delay, d1		20.3			17.8			18.2			22.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.3			1.6			0.5			12.4	
Delay (s)		22.6			19.4			18.7			34.4	
Level of Service		C			B			B			C	
Approach Delay (s)		22.6			19.4			18.7				
Approach LOS		C			B			B				

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT
Lane Configurations	↰
Volume (vph)	28
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	0.95
Frt	1.00
Flt Protected	0.96
Satd. Flow (prot)	1699
Flt Permitted	0.39
Satd. Flow (perm)	684
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	30
RTOR Reduction (vph)	0
Lane Group Flow (vph)	174
Turn Type	
Protected Phases	6
Permitted Phases	
Actuated Green, G (s)	20.2
Effective Green, g (s)	20.2
Actuated g/C Ratio	0.39
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	265
v/s Ratio Prot	
v/s Ratio Perm	c0.25
v/c Ratio	0.66
Uniform Delay, d1	13.1
Progression Factor	1.00
Incremental Delay, d2	5.8
Delay (s)	18.9
Level of Service	B
Approach Delay (s)	26.2
Approach LOS	C

Intersection Summary

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Volume (vph)	143	84	15	15	0	219	12	31	10	17	225	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frt		0.99			0.87			0.94			1.00	
Flt Protected		0.97			1.00			1.00			0.95	
Satd. Flow (prot)		1794			1622			1744			1681	
Flt Permitted		0.97			1.00			1.00			0.95	
Satd. Flow (perm)		1794			1622			1744			1681	
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.83	0.85	0.85	0.85	0.92	0.92
Adj. Flow (vph)	161	94	17	18	0	264	14	36	12	20	245	170
RTOR Reduction (vph)	0	3	0	0	2	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	269	0	0	294	0	0	52	0	0	220	0
Turn Type	Split			Split							Prot	Perm
Protected Phases	3	3		4	4			2			1	
Permitted Phases												6
Actuated Green, G (s)		14.1			15.1			13.0			11.1	
Effective Green, g (s)		14.1			15.1			13.0			11.1	
Actuated g/C Ratio		0.20			0.22			0.19			0.16	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		365			353			327			269	
v/s Ratio Prot		c0.15			c0.18			0.03			0.13	
v/s Ratio Perm												
v/c Ratio		0.74			0.83			0.16			0.82	
Uniform Delay, d1		25.9			25.9			23.6			28.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		7.5			15.3			0.2			17.3	
Delay (s)		33.4			41.2			23.8			45.4	
Level of Service		C			D			C			D	
Approach Delay (s)		33.4			41.2			23.8				
Approach LOS		C			D			C				

Intersection Summary

HCM Average Control Delay	45.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT
Lane Configurations	↰
Volume (vph)	33
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	0.95
Frt	1.00
Flt Protected	0.96
Satd. Flow (prot)	1698
Flt Permitted	0.33
Satd. Flow (perm)	583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	231
Turn Type	
Protected Phases	6
Permitted Phases	
Actuated Green, G (s)	28.1
Effective Green, g (s)	28.1
Actuated g/C Ratio	0.41
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	236
v/s Ratio Prot	
v/s Ratio Perm	c0.40
v/c Ratio	0.98
Uniform Delay, d1	20.3
Progression Factor	1.00
Incremental Delay, d2	52.0
Delay (s)	72.3
Level of Service	E
Approach Delay (s)	59.2
Approach LOS	E

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	336	41	127	134	47	49	188	102	195	298	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.88	0.88	0.88	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	41	415	51	144	152	53	56	216	117	214	327	48
RTOR Reduction (vph)	0	0	34	0	0	37	0	0	94	0	0	34
Lane Group Flow (vph)	41	415	17	144	152	16	56	216	23	214	327	14
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.8	14.0	14.0	7.2	18.4	18.4	4.5	11.7	11.7	10.4	17.6	17.6
Effective Green, g (s)	2.8	14.0	14.0	7.2	18.4	18.4	4.5	11.7	11.7	10.4	17.6	17.6
Actuated g/C Ratio	0.05	0.24	0.24	0.12	0.31	0.31	0.08	0.20	0.20	0.18	0.30	0.30
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	84	836	374	215	1578	491	134	698	312	310	1050	470
v/s Ratio Prot	0.02	c0.12		c0.08	0.03		0.03	0.06		c0.12	c0.09	
v/s Ratio Perm			0.01			0.01			0.01			0.01
v/c Ratio	0.49	0.50	0.05	0.67	0.10	0.03	0.42	0.31	0.07	0.69	0.31	0.03
Uniform Delay, d1	27.6	19.6	17.5	24.9	14.5	14.3	26.2	20.3	19.4	22.9	16.2	14.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.5	0.1	7.7	0.0	0.0	2.1	0.3	0.1	6.5	0.2	0.0
Delay (s)	32.0	20.1	17.5	32.6	14.6	14.3	28.3	20.6	19.5	29.4	16.3	14.8
Level of Service	C	C	B	C	B	B	C	C	B	C	B	B
Approach Delay (s)		20.8			22.0			21.4			21.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	206	152	288	448	153	158	492	137	127	400	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.75	0.75	0.75	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	105	251	185	384	597	204	188	586	163	137	430	46
RTOR Reduction (vph)	0	0	145	0	0	150	0	0	115	0	0	34
Lane Group Flow (vph)	105	251	40	384	597	54	188	586	48	137	430	12
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.0	14.8	14.8	10.3	18.1	18.1	10.0	20.1	20.1	7.4	17.5	17.5
Effective Green, g (s)	7.0	14.8	14.8	10.3	18.1	18.1	10.0	20.1	20.1	7.4	17.5	17.5
Actuated g/C Ratio	0.10	0.22	0.22	0.15	0.26	0.26	0.15	0.29	0.29	0.11	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	764	342	266	1342	418	258	1037	464	191	903	404
v/s Ratio Prot	0.06	0.07		c0.22	c0.12		c0.11	c0.17		0.08	0.12	
v/s Ratio Perm			0.03			0.03			0.03			0.01
v/c Ratio	0.58	0.33	0.12	1.44	0.44	0.13	0.73	0.57	0.10	0.72	0.48	0.03
Uniform Delay, d1	29.4	22.7	21.6	29.1	21.1	19.2	28.0	20.5	17.7	29.6	21.7	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.3	0.2	219.6	0.2	0.1	9.8	0.7	0.1	12.1	0.4	0.0
Delay (s)	34.1	23.0	21.8	248.8	21.3	19.4	37.9	21.3	17.8	41.7	22.1	19.2
Level of Service	C	C	C	F	C	B	D	C	B	D	C	B
Approach Delay (s)		24.7			94.7			24.0			26.2	
Approach LOS		C			F			C			C	

Intersection Summary

HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	147	397	86	93	254	46	41	146	189	10	36	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.91	0.91	0.91	0.73	0.73	0.73	0.54	0.54	0.54
Adj. Flow (vph)	193	522	113	102	279	51	56	200	259	19	67	67
RTOR Reduction (vph)	0	0	78	0	0	37	0	0	196	0	0	52
Lane Group Flow (vph)	193	522	35	102	279	14	56	200	63	19	67	15
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	5.3	14.5	14.5	3.9	13.1	13.1	1.6	11.2	11.2	0.7	10.3	10.3
Effective Green, g (s)	5.3	14.5	14.5	3.9	13.1	13.1	1.6	11.2	11.2	0.7	10.3	10.3
Actuated g/C Ratio	0.11	0.31	0.31	0.08	0.28	0.28	0.03	0.24	0.24	0.02	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	203	1108	496	149	1001	448	61	451	383	27	414	352
v/s Ratio Prot	c0.11	c0.15		0.06	0.08		c0.03	c0.11		0.01	0.04	
v/s Ratio Perm			0.02			0.01			0.04			0.01
v/c Ratio	0.95	0.47	0.07	0.68	0.28	0.03	0.92	0.44	0.16	0.70	0.16	0.04
Uniform Delay, d1	20.4	12.8	11.2	20.6	12.9	12.0	22.3	14.9	13.9	22.7	14.5	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	49.0	0.3	0.1	12.3	0.2	0.0	85.4	0.7	0.2	59.2	0.2	0.0
Delay (s)	69.4	13.1	11.2	32.9	13.1	12.0	107.6	15.6	14.1	81.9	14.7	14.2
Level of Service	E	B	B	C	B	B	F	B	B	F	B	B
Approach Delay (s)		26.0			17.6			24.8			22.8	
Approach LOS		C			B			C			C	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	347	85	227	603	19	155	34	225	39	121	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.78	0.78	0.78	0.93	0.93	0.93	0.51	0.51	0.51
Adj. Flow (vph)	32	394	97	291	773	24	167	37	242	76	237	169
RTOR Reduction (vph)	0	0	71	0	0	16	0	0	171	0	0	127
Lane Group Flow (vph)	32	394	26	291	773	8	167	37	71	76	237	42
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	1.7	14.7	14.7	5.1	18.1	18.1	5.1	16.0	16.0	2.8	13.7	13.7
Effective Green, g (s)	1.7	14.7	14.7	5.1	18.1	18.1	5.1	16.0	16.0	2.8	13.7	13.7
Actuated g/C Ratio	0.03	0.27	0.27	0.09	0.33	0.33	0.09	0.29	0.29	0.05	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	55	953	426	165	1173	525	165	546	464	91	467	397
v/s Ratio Prot	0.02	0.11		c0.16	c0.22		c0.09	0.02		0.04	c0.13	
v/s Ratio Perm			0.02			0.01			0.04			0.03
v/c Ratio	0.58	0.41	0.06	1.76	0.66	0.02	1.01	0.07	0.15	0.84	0.51	0.11
Uniform Delay, d1	26.1	16.4	14.8	24.8	15.6	12.3	24.8	13.9	14.3	25.7	17.6	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.7	0.3	0.1	367.2	1.4	0.0	73.3	0.1	0.2	45.3	0.9	0.1
Delay (s)	40.8	16.7	14.9	392.0	17.0	12.3	98.0	14.0	14.4	71.0	18.4	15.9
Level of Service	D	B	B	F	B	B	F	B	B	E	B	B
Approach Delay (s)		17.8			117.2			45.7			25.8	
Approach LOS		B			F			D			C	

Intersection Summary

HCM Average Control Delay	66.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	115	23	27	140	179	47	194	16	99	113	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.74	0.74	0.74	0.81	0.81	0.81
Adj. Flow (vph)	60	128	26	30	157	201	64	262	22	122	140	49
RTOR Reduction (vph)	0	0	19	0	0	155	0	0	16	0	0	32
Lane Group Flow (vph)	60	128	7	30	157	46	64	262	6	122	140	17
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.5	12.7	12.7	0.8	11.0	11.0	2.5	13.7	13.7	5.3	16.5	16.5
Effective Green, g (s)	2.5	12.7	12.7	0.8	11.0	11.0	2.5	13.7	13.7	5.3	16.5	16.5
Actuated g/C Ratio	0.05	0.26	0.26	0.02	0.23	0.23	0.05	0.28	0.28	0.11	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	91	488	415	29	423	359	91	526	447	193	634	539
v/s Ratio Prot	c0.03	0.07		0.02	c0.08		0.04	c0.14		c0.07	c0.08	
v/s Ratio Perm			0.00			0.03			0.00			0.01
v/c Ratio	0.66	0.26	0.02	1.03	0.37	0.13	0.70	0.50	0.01	0.63	0.22	0.03
Uniform Delay, d1	22.6	14.2	13.3	23.9	15.8	14.9	22.6	14.5	12.5	20.7	11.4	10.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.0	0.3	0.0	177.9	0.6	0.2	21.8	0.7	0.0	6.6	0.2	0.0
Delay (s)	38.5	14.5	13.3	201.8	16.4	15.1	44.4	15.3	12.5	27.3	11.6	10.7
Level of Service	D	B	B	F	B	B	D	B	B	C	B	B
Approach Delay (s)		21.1			30.0			20.5			17.6	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	176	50	51	135	162	46	220	32	230	227	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.78	0.78	0.78	0.85	0.85	0.85	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	79	226	64	60	159	191	49	237	34	258	255	49
RTOR Reduction (vph)	0	0	52	0	0	155	0	0	26	0	0	31
Lane Group Flow (vph)	79	226	12	60	159	36	49	237	8	258	255	18
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.3	8.4	8.4	2.3	8.4	8.4	1.5	10.5	10.5	7.8	16.8	16.8
Effective Green, g (s)	2.3	8.4	8.4	2.3	8.4	8.4	1.5	10.5	10.5	7.8	16.8	16.8
Actuated g/C Ratio	0.05	0.19	0.19	0.05	0.19	0.19	0.03	0.23	0.23	0.17	0.37	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	90	348	295	90	348	295	59	435	369	307	696	591
v/s Ratio Prot	c0.04	c0.12		0.03	0.09		0.03	c0.13		c0.15	0.14	
v/s Ratio Perm			0.01			0.02			0.01			0.01
v/c Ratio	0.88	0.65	0.04	0.67	0.46	0.12	0.83	0.54	0.02	0.84	0.37	0.03
Uniform Delay, d1	21.2	16.9	15.0	21.0	16.3	15.2	21.6	15.2	13.3	18.0	10.2	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.2	4.1	0.1	17.1	1.0	0.2	60.6	1.4	0.0	18.3	0.3	0.0
Delay (s)	77.5	21.1	15.1	38.1	17.2	15.4	82.3	16.5	13.3	36.3	10.6	9.0
Level of Service	E	C	B	D	B	B	F	B	B	D	B	A
Approach Delay (s)		32.1			19.4			26.3			22.2	
Approach LOS		C			B			C			C	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	121	103	47	175	17	183	351	43	53	462	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3492		3433	3481		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3492		3433	3481		1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.82	0.82	0.82	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	82	130	111	57	213	21	238	456	56	62	544	202
RTOR Reduction (vph)	0	0	91	0	8	0	0	8	0	0	0	140
Lane Group Flow (vph)	82	130	20	57	226	0	238	504	0	62	544	62
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	5.5	11.0	11.0	5.3	10.8		10.1	21.7		7.1	18.7	18.7
Effective Green, g (s)	5.5	11.0	11.0	5.3	10.8		10.1	21.7		7.1	18.7	18.7
Actuated g/C Ratio	0.09	0.18	0.18	0.09	0.18		0.17	0.36		0.12	0.31	0.31
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	309	637	285	154	617		567	1236		206	1083	484
v/s Ratio Prot	c0.02	0.04		0.03	c0.06		0.07	c0.14		0.04	c0.15	
v/s Ratio Perm			0.01									0.04
v/c Ratio	0.27	0.20	0.07	0.37	0.37		0.42	0.41		0.30	0.50	0.13
Uniform Delay, d1	25.9	21.3	20.8	26.3	22.1		22.9	14.9		24.7	17.4	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	0.1	1.5	0.4		0.5	0.2		0.8	0.4	0.1
Delay (s)	26.4	21.5	20.9	27.8	22.5		23.4	15.1		25.6	17.8	15.4
Level of Service	C	C	C	C	C		C	B		C	B	B
Approach Delay (s)		22.5			23.5			17.7			17.8	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	282	172	86	290	81	311	467	28	114	501	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3423		3433	3509		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3423		3433	3509		1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.81	0.81	0.81	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	239	300	183	106	358	100	353	531	32	127	557	116
RTOR Reduction (vph)	0	0	144	0	26	0	0	4	0	0	0	86
Lane Group Flow (vph)	239	300	39	106	432	0	353	559	0	127	557	30
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	11.1	16.5	16.5	11.5	16.9		13.2	22.5		11.1	20.4	20.4
Effective Green, g (s)	11.1	16.5	16.5	11.5	16.9		13.2	22.5		11.1	20.4	20.4
Actuated g/C Ratio	0.14	0.21	0.21	0.15	0.22		0.17	0.29		0.14	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	491	752	337	262	745		584	1017		253	930	416
v/s Ratio Prot	c0.07	0.08		0.06	c0.13		0.10	c0.16		0.07	c0.16	
v/s Ratio Perm			0.02									0.02
v/c Ratio	0.49	0.40	0.12	0.40	0.58		0.60	0.55		0.50	0.60	0.07
Uniform Delay, d1	30.6	26.3	24.7	29.9	27.2		29.8	23.3		30.7	25.0	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	0.2	1.0	1.2		1.8	0.6		1.6	1.0	0.1
Delay (s)	31.4	26.6	24.8	31.0	28.3		31.6	23.9		32.3	26.1	21.6
Level of Service	C	C	C	C	C		C	C		C	C	C
Approach Delay (s)		27.7			28.8			26.8			26.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	147	25	140	48	662	0	0	486	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.77	0.77	0.77	0.78	0.78	0.78	0.79	0.79	0.79
Adj. Flow (vph)	0	0	0	191	32	182	62	849	0	0	615	156
RTOR Reduction (vph)	0	0	0	0	0	110	0	0	0	0	0	91
Lane Group Flow (vph)	0	0	0	191	32	72	62	849	0	0	615	65
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				11.3	11.3	11.3	4.1	24.8			16.7	16.7
Effective Green, g (s)				11.3	11.3	11.3	4.1	24.8			16.7	16.7
Actuated g/C Ratio				0.26	0.26	0.26	0.09	0.56			0.38	0.38
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				454	477	406	165	1990			1340	599
v/s Ratio Prot				c0.11	0.02		0.04	c0.24			0.17	
v/s Ratio Perm						0.05						0.04
v/c Ratio				0.42	0.07	0.18	0.38	0.43			0.46	0.11
Uniform Delay, d1				13.7	12.4	12.8	18.8	5.6			10.3	8.9
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.6	0.1	0.2	1.4	0.1			0.3	0.1
Delay (s)				14.3	12.5	13.0	20.2	5.7			10.6	9.0
Level of Service				B	B	B	C	A			B	A
Approach Delay (s)		0.0			13.6			6.7			10.2	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	44.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	182	39	111	37	736	0	0	812	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.98	0.98	0.98	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	217	46	132	38	751	0	0	912	242
RTOR Reduction (vph)	0	0	0	0	0	97	0	0	0	0	0	88
Lane Group Flow (vph)	0	0	0	217	46	35	38	751	0	0	912	154
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				12.1	12.1	12.1	2.3	26.1			19.8	19.8
Effective Green, g (s)				12.1	12.1	12.1	2.3	26.1			19.8	19.8
Actuated g/C Ratio				0.26	0.26	0.26	0.05	0.56			0.43	0.43
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				464	488	415	88	1999			1517	678
v/s Ratio Prot				c0.12	0.02		0.02	c0.21			c0.26	
v/s Ratio Perm						0.02						0.10
v/c Ratio				0.47	0.09	0.08	0.43	0.38			0.60	0.23
Uniform Delay, d1				14.3	12.9	12.9	21.3	5.6			10.2	8.4
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.7	0.1	0.1	3.4	0.1			0.7	0.2
Delay (s)				15.1	13.0	13.0	24.7	5.7			10.8	8.5
Level of Service				B	B	B	C	A			B	A
Approach Delay (s)		0.0			14.1			6.6			10.4	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	46.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	27	53	0	0	0	0	569	112	90	541	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		0.97						1.00		0.95	1.00	
Satd. Flow (prot)		1749						3452		1770	3539	
Flt Permitted		0.97						1.00		0.95	1.00	
Satd. Flow (perm)		1749						3452		1770	3539	
Peak-hour factor, PHF	0.75	0.75	0.75	0.92	0.92	0.92	0.77	0.77	0.77	0.73	0.73	0.73
Adj. Flow (vph)	211	36	71	0	0	0	0	739	145	123	741	0
RTOR Reduction (vph)	0	15	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	303	0	0	0	0	0	863	0	123	741	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)		15.9						20.6		7.4	32.0	
Effective Green, g (s)		15.9						20.6		7.4	32.0	
Actuated g/C Ratio		0.28						0.37		0.13	0.57	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		497						1272		234	2026	
v/s Ratio Prot		c0.17						c0.25		c0.07	0.21	
v/s Ratio Perm												
v/c Ratio		0.61						0.68		0.53	0.37	
Uniform Delay, d1		17.3						14.9		22.6	6.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		2.1						1.5		2.1	0.1	
Delay (s)		19.4						16.3		24.7	6.6	
Level of Service		B						B		C	A	
Approach Delay (s)		19.4			0.0			16.3			9.2	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	30	62	0	0	0	0	562	106	197	798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		0.97						1.00		0.95	1.00	
Satd. Flow (prot)		1750						3455		1770	3539	
Flt Permitted		0.97						1.00		0.95	1.00	
Satd. Flow (perm)		1750						3455		1770	3539	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	231	32	67	0	0	0	0	624	118	229	928	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	317	0	0	0	0	0	721	0	229	928	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)		16.2						19.0		12.0	35.0	
Effective Green, g (s)		16.2						19.0		12.0	35.0	
Actuated g/C Ratio		0.27						0.32		0.20	0.59	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		479						1109		359	2092	
v/s Ratio Prot		c0.18						c0.21		c0.13	0.26	
v/s Ratio Perm												
v/c Ratio		0.66						0.65		0.64	0.44	
Uniform Delay, d1		19.1						17.2		21.6	6.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		3.4						1.4		3.7	0.2	
Delay (s)		22.5						18.6		25.3	6.9	
Level of Service		C						B		C	A	
Approach Delay (s)		22.5			0.0			18.6			10.5	
Approach LOS		C			A			B			B	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	116	47	63	131	86	38	310	72	73	239	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.77	0.87	0.87	0.87	0.72	0.72	0.72	0.68	0.68	0.68
Adj. Flow (vph)	148	151	61	72	151	99	53	431	100	107	351	159
RTOR Reduction (vph)	0	0	48	0	0	84	0	0	68	0	0	101
Lane Group Flow (vph)	148	151	13	72	151	15	53	431	32	107	351	58
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.7	12.0	12.0	4.6	8.9	8.9	4.1	18.4	18.4	7.0	21.3	21.3
Effective Green, g (s)	7.7	12.0	12.0	4.6	8.9	8.9	4.1	18.4	18.4	7.0	21.3	21.3
Actuated g/C Ratio	0.13	0.21	0.21	0.08	0.15	0.15	0.07	0.32	0.32	0.12	0.37	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	235	385	328	140	286	243	125	1123	502	214	1300	581
v/s Ratio Prot	c0.08	c0.08		0.04	c0.08		0.03	c0.12		c0.06	c0.10	
v/s Ratio Perm			0.01			0.01			0.02			0.04
v/c Ratio	0.63	0.39	0.04	0.51	0.53	0.06	0.42	0.38	0.06	0.50	0.27	0.10
Uniform Delay, d1	23.8	19.9	18.4	25.6	22.6	21.0	25.8	15.4	13.8	23.9	12.9	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.7	0.0	3.2	1.8	0.1	2.3	0.2	0.1	1.8	0.1	0.1
Delay (s)	29.0	20.5	18.4	28.8	24.4	21.1	28.1	15.6	13.8	25.7	13.0	12.1
Level of Service	C	C	B	C	C	C	C	B	B	C	B	B
Approach Delay (s)		23.7			24.4			16.4			15.0	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	192	54	68	169	91	79	258	77	114	236	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.81	0.81	0.81	0.87	0.87	0.87
Adj. Flow (vph)	165	231	65	82	204	110	98	319	95	131	271	176
RTOR Reduction (vph)	0	0	45	0	0	85	0	0	77	0	0	140
Lane Group Flow (vph)	165	231	20	82	204	25	98	319	18	131	271	36
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	11.3	18.6	18.6	6.8	14.1	14.1	7.3	11.9	11.9	8.1	12.7	12.7
Effective Green, g (s)	11.3	18.6	18.6	6.8	14.1	14.1	7.3	11.9	11.9	8.1	12.7	12.7
Actuated g/C Ratio	0.18	0.30	0.30	0.11	0.23	0.23	0.12	0.19	0.19	0.13	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	564	480	196	428	364	210	686	307	234	732	327
v/s Ratio Prot	c0.09	c0.12		0.05	0.11		0.06	c0.09		c0.07	0.08	
v/s Ratio Perm			0.01			0.02			0.01			0.02
v/c Ratio	0.51	0.41	0.04	0.42	0.48	0.07	0.47	0.47	0.06	0.56	0.37	0.11
Uniform Delay, d1	22.5	17.0	15.1	25.5	20.5	18.5	25.2	21.9	20.2	25.0	20.9	19.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.0	1.4	0.8	0.1	1.6	0.5	0.1	2.9	0.3	0.2
Delay (s)	23.8	17.5	15.1	26.9	21.3	18.6	26.9	22.4	20.3	27.9	21.2	19.9
Level of Service	C	B	B	C	C	B	C	C	C	C	C	B
Approach Delay (s)		19.4			21.7			22.9			22.3	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	241	134	10	123	109	0	0	59	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.75	0.75	0.75	0.95	0.95	0.95	0.78	0.78	0.78
Hourly flow rate (vph)	0	0	0	321	179	13	129	115	0	0	76	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	192			0			811	835	0	885	828	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	192			0			811	835	0	885	828	96
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			80			23	53	100	100	69	96
cM capacity (veh/h)	1379			1622			169	242	1084	129	245	942

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	411	103	244	117
Volume Left	321	0	129	0
Volume Right	0	13	0	41
cSH	1622	1700	197	331
Volume to Capacity	0.20	0.06	1.24	0.35
Queue Length 95th (ft)	18	0	325	39
Control Delay (s)	6.4	0.0	192.2	21.7
Lane LOS	A		F	C
Approach Delay (s)	5.1		192.2	21.7
Approach LOS			F	C

Intersection Summary			
Average Delay	59.6		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
18: W 4th Street & S Redington Street

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	310	152	12	84	86	0	0	167	62
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.72	0.72	0.72	0.82	0.82	0.82	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	431	211	17	102	105	0	0	242	90
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	228			0			1178	1089	0	1133	1081	114
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	228			0			1178	1089	0	1133	1081	114
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			73			0	33	100	100	0	90
cM capacity (veh/h)	1338			1622			0	157	1084	60	159	917

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	536	122	207	332
Volume Left	431	0	102	0
Volume Right	0	17	0	90
cSH	1622	1700	0	205
Volume to Capacity	0.27	0.07	Err	1.62
Queue Length 95th (ft)	27	0	Err	541
Control Delay (s)	6.9	0.0	Err	341.6
Lane LOS	A		F	F
Approach Delay (s)	5.6		Err	341.6
Approach LOS			F	F

Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	182	8	0	0	0	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.43	0.43
Hourly flow rate (vph)	228	10	0	0	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			238		232	119
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			238		232	119
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			1327		735	911

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	152	86	28
Volume Left	0	0	0
Volume Right	0	10	28
cSH	1700	1700	911
Volume to Capacity	0.09	0.05	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0		9.1
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	336	7	0	0	0	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.61	0.61
Hourly flow rate (vph)	373	8	0	0	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			381		377	191
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			381		377	191
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			1174		597	819

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	249	132	28
Volume Left	0	0	0
Volume Right	0	8	28
cSH	1700	1700	819
Volume to Capacity	0.15	0.08	0.03
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.6
Lane LOS			A
Approach Delay (s)	0.0		9.6
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	91	24	92	106	48	34	335	93	62	528	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3429		1770	3373		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3429		1770	3373		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.82	0.82	0.82	0.81	0.81	0.81	0.73	0.73	0.73
Adj. Flow (vph)	73	107	28	112	129	59	42	414	115	85	723	137
RTOR Reduction (vph)	0	25	0	0	49	0	0	0	73	0	0	58
Lane Group Flow (vph)	73	110	0	112	139	0	42	414	42	85	723	79
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	4.3	6.4		6.9	9.0		2.4	19.3	19.3	4.6	21.5	21.5
Effective Green, g (s)	4.3	6.4		6.9	9.0		2.4	19.3	19.3	4.6	21.5	21.5
Actuated g/C Ratio	0.08	0.12		0.13	0.17		0.05	0.36	0.36	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	413		230	571		80	1284	574	153	1430	640
v/s Ratio Prot	0.04	0.03		c0.06	c0.04		0.02	0.12		c0.05	c0.20	
v/s Ratio Perm									0.03			0.05
v/c Ratio	0.51	0.27		0.49	0.24		0.53	0.32	0.07	0.56	0.51	0.12
Uniform Delay, d1	23.4	21.3		21.5	19.1		24.8	12.2	11.1	23.3	11.9	9.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.3		1.6	0.2		6.1	0.1	0.1	4.3	0.3	0.1
Delay (s)	26.5	21.6		23.1	19.4		30.9	12.4	11.1	27.6	12.2	10.0
Level of Service	C	C		C	B		C	B	B	C	B	B
Approach Delay (s)		23.3			20.8			13.5			13.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	141	43	125	129	103	48	419	94	58	343	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3416		1770	3304		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3416		1770	3304		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.90	0.90	0.90	0.97	0.97	0.97	0.80	0.80	0.80
Adj. Flow (vph)	189	152	46	139	143	114	49	432	97	72	429	134
RTOR Reduction (vph)	0	33	0	0	94	0	0	0	74	0	0	101
Lane Group Flow (vph)	189	165	0	139	163	0	49	432	23	72	429	34
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.5	13.3		8.0	9.8		4.1	13.3	13.3	4.6	13.8	13.8
Effective Green, g (s)	11.5	13.3		8.0	9.8		4.1	13.3	13.3	4.6	13.8	13.8
Actuated g/C Ratio	0.21	0.24		0.14	0.18		0.07	0.24	0.24	0.08	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	369	823		257	587		131	853	381	148	885	396
v/s Ratio Prot	c0.11	c0.05		0.08	c0.05		0.03	c0.12		c0.04	0.12	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.51	0.20		0.54	0.28		0.37	0.51	0.06	0.49	0.48	0.08
Uniform Delay, d1	19.4	16.7		21.9	19.6		24.3	18.1	16.1	24.2	17.7	15.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		2.3	0.3		1.8	0.5	0.1	2.5	0.4	0.1
Delay (s)	20.6	16.8		24.2	19.9		26.1	18.6	16.2	26.7	18.1	16.0
Level of Service	C	B		C	B		C	B	B	C	B	B
Approach Delay (s)		18.7			21.4			18.8			18.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	35	23	90	41	474	0	0	401	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					1.00		1.00	0.95			0.95	1.00
Frt					0.92		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1690		1770	3539			3539	1583
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1690		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.73	0.73	0.73	0.83	0.83	0.83	0.74	0.74	0.74
Adj. Flow (vph)	0	0	0	48	32	123	49	571	0	0	542	304
RTOR Reduction (vph)	0	0	0	0	91	0	0	0	0	0	0	173
Lane Group Flow (vph)	0	0	0	0	112	0	49	571	0	0	542	131
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					6.5		2.2	21.9			15.7	15.7
Effective Green, g (s)					6.5		2.2	21.9			15.7	15.7
Actuated g/C Ratio					0.18		0.06	0.60			0.43	0.43
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					302		107	2129			1526	683
v/s Ratio Prot					c0.07		0.03	c0.16			c0.15	
v/s Ratio Perm												0.08
v/c Ratio					0.37		0.46	0.27			0.36	0.19
Uniform Delay, d1					13.1		16.5	3.4			7.0	6.4
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					0.8		3.1	0.1			0.1	0.1
Delay (s)					13.9		19.6	3.5			7.1	6.6
Level of Service					B		B	A			A	A
Approach Delay (s)		0.0			13.9			4.8			6.9	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	36.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	26	19	82	57	553	0	0	388	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					1.00		1.00	0.95			0.95	1.00
Frt					0.91		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1683		1770	3539			3539	1583
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1683		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	32	23	101	64	621	0	0	408	201
RTOR Reduction (vph)	0	0	0	0	84	0	0	0	0	0	0	124
Lane Group Flow (vph)	0	0	0	0	72	0	64	621	0	0	408	77
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					5.5		2.2	18.5			12.3	12.3
Effective Green, g (s)					5.5		2.2	18.5			12.3	12.3
Actuated g/C Ratio					0.17		0.07	0.58			0.38	0.38
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					289		122	2046			1360	608
v/s Ratio Prot					c0.04		0.04	c0.18			0.12	
v/s Ratio Perm												0.05
v/c Ratio					0.25		0.52	0.30			0.30	0.13
Uniform Delay, d1					11.5		14.4	3.5			6.9	6.4
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					0.5		4.0	0.1			0.1	0.1
Delay (s)					11.9		18.4	3.5			7.0	6.5
Level of Service					B		B	A			A	A
Approach Delay (s)		0.0			11.9			4.9			6.8	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	32.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	15	19	10	0	74	0	274	45	96	327	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770		1583		1863	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00	0.75		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1390		1583		1863	1583	1770	3539	
Peak-hour factor, PHF	0.86	0.86	0.86	0.81	0.81	0.81	0.79	0.79	0.79	0.80	0.80	0.80
Adj. Flow (vph)	187	17	22	12	0	91	0	347	57	120	409	0
RTOR Reduction (vph)	0	0	18	0	0	74	0	0	35	0	0	0
Lane Group Flow (vph)	187	17	4	12	0	17	0	347	22	120	409	0
Turn Type	Perm		Perm	custom		custom			Perm	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	7.8	7.8	7.8	7.8		7.8		15.7	15.7	6.1	25.8	
Effective Green, g (s)	7.8	7.8	7.8	7.8		7.8		15.7	15.7	6.1	25.8	
Actuated g/C Ratio	0.19	0.19	0.19	0.19		0.19		0.38	0.38	0.15	0.62	
Clearance Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	332	349	297	261		297		703	597	260	2195	
v/s Ratio Prot		0.01						c0.19		c0.07	0.12	
v/s Ratio Perm	c0.11		0.00	0.01		0.01			0.01			
v/c Ratio	0.56	0.05	0.01	0.05		0.06		0.49	0.04	0.46	0.19	
Uniform Delay, d1	15.4	13.9	13.8	13.9		13.9		9.9	8.2	16.2	3.4	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	0.1	0.0	0.1		0.1		0.5	0.0	1.3	0.0	
Delay (s)	17.5	13.9	13.8	13.9		14.0		10.5	8.2	17.5	3.4	
Level of Service	B	B	B	B		B		B	A	B	A	
Approach Delay (s)		16.9			14.0			10.1			6.6	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	41.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	18	18	12	0	87	0	298	34	118	298	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770		1583		1863	1583	1770	3539	
Flt Permitted	0.95	1.00	1.00	0.74		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1384		1583		1863	1583	1770	3539	
Peak-hour factor, PHF	0.83	0.83	0.83	0.75	0.75	0.75	0.83	0.83	0.83	0.94	0.94	0.94
Adj. Flow (vph)	269	22	22	16	0	116	0	359	41	126	317	0
RTOR Reduction (vph)	0	0	17	0	0	90	0	0	26	0	0	0
Lane Group Flow (vph)	269	22	5	16	0	26	0	359	15	126	317	0
Turn Type	Perm		Perm	custom		custom			Perm	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4	8		8			2			
Actuated Green, G (s)	9.9	9.9	9.9	9.9		9.9		16.5	16.5	6.2	26.7	
Effective Green, g (s)	9.9	9.9	9.9	9.9		9.9		16.5	16.5	6.2	26.7	
Actuated g/C Ratio	0.22	0.22	0.22	0.22		0.22		0.37	0.37	0.14	0.60	
Clearance Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	393	414	351	307		351		689	586	246	2119	
v/s Ratio Prot		0.01						c0.19		c0.07	0.09	
v/s Ratio Perm	c0.15		0.00	0.01		0.02			0.01			
v/c Ratio	0.68	0.05	0.01	0.05		0.07		0.52	0.03	0.51	0.15	
Uniform Delay, d1	15.9	13.7	13.5	13.7		13.7		11.0	8.9	17.8	3.9	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.9	0.1	0.0	0.1		0.1		0.7	0.0	1.8	0.0	
Delay (s)	20.8	13.7	13.6	13.7		13.8		11.7	9.0	19.6	4.0	
Level of Service	C	B	B	B		B		B	A	B	A	
Approach Delay (s)		19.8			13.8			11.4			8.4	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	7	66	44	11	20	65	240	41	18	493	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.89	0.89	0.89	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	17	9	81	49	12	22	75	276	47	21	567	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1070	1089	575	1061	1073	299	583			323		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1070	1089	575	1061	1073	299	583			323		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	96	84	68	94	97	92			98		
cM capacity (veh/h)	171	196	518	153	200	740	992			1237		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	107	84	75	323	21	583
Volume Left	17	49	75	0	21	0
Volume Right	81	22	0	47	0	16
cSH	355	203	992	1700	1237	1700
Volume to Capacity	0.30	0.42	0.08	0.19	0.02	0.34
Queue Length 95th (ft)	31	47	6	0	1	0
Control Delay (s)	19.5	34.8	8.9	0.0	8.0	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	19.5	34.8	1.7		0.3	
Approach LOS	C	D				

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
23: E Lacey Blvd & 8 th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	11	71	27	10	39	96	491	49	13	244	38
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.76	0.76	0.76	0.94	0.94	0.94	0.82	0.82	0.82
Hourly flow rate (vph)	32	13	87	36	13	51	102	522	52	16	298	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1137	1131	321	1089	1128	548	344			574		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1137	1131	321	1089	1128	548	344			574		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	93	88	76	93	90	92			98		
cM capacity (veh/h)	142	183	720	148	184	536	1215			999		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	132	100	102	574	16	344
Volume Left	32	36	102	0	16	0
Volume Right	87	51	0	52	0	46
cSH	315	246	1215	1700	999	1700
Volume to Capacity	0.42	0.41	0.08	0.34	0.02	0.20
Queue Length 95th (ft)	49	47	7	0	1	0
Control Delay (s)	24.3	29.3	8.2	0.0	8.7	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	24.3	29.3	1.2		0.4	
Approach LOS	C	D				

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	49.6%	ICU Level of Service	A	
Analysis Period (min)	15			

BAKERSFIELD EXISTING PLUS PROJECT CONDITIONS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1255	348	0	2208	1340	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2		4.9	4.9	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	4921	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	4921	
Peak-hour factor, PHF	0.83	0.83	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1512	419	0	2598	1576	433
RTOR Reduction (vph)	0	23	0	0	66	0
Lane Group Flow (vph)	1512	396	0	2598	1943	0
Turn Type		Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.8	20.8		45.1	45.1	
Effective Green, g (s)	20.8	20.8		45.1	45.1	
Actuated g/C Ratio	0.28	0.28		0.60	0.60	
Clearance Time (s)	4.2	4.2		4.9	4.9	
Vehicle Extension (s)	3.0	3.0		4.0	4.0	
Lane Grp Cap (vph)	491	439		3058	2959	
v/s Ratio Prot	c0.85			c0.51	0.39	
v/s Ratio Perm		0.25				
v/c Ratio	3.08	0.90		0.85	0.66	
Uniform Delay, d1	27.1	26.1		12.2	9.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	941.1	21.3		2.5	0.6	
Delay (s)	968.2	47.4		14.7	10.4	
Level of Service	F	D		B	B	
Approach Delay (s)	768.4			14.7	10.4	
Approach LOS	F			B	B	

Intersection Summary

HCM Average Control Delay	236.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	371	159	0	1110	1133	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2		4.9	4.9	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	4962	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	4962	
Peak-hour factor, PHF	0.81	0.81	0.83	0.83	0.75	0.75
Adj. Flow (vph)	458	196	0	1337	1511	291
RTOR Reduction (vph)	0	27	0	0	39	0
Lane Group Flow (vph)	458	169	0	1337	1763	0
Turn Type		Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.3	20.3		43.1	43.1	
Effective Green, g (s)	20.3	20.3		43.1	43.1	
Actuated g/C Ratio	0.28	0.28		0.59	0.59	
Clearance Time (s)	4.2	4.2		4.9	4.9	
Vehicle Extension (s)	3.0	3.0		4.0	4.0	
Lane Grp Cap (vph)	496	443		3023	2950	
v/s Ratio Prot	c0.26			0.26	c0.36	
v/s Ratio Perm		0.11				
v/c Ratio	0.92	0.38		0.44	0.60	
Uniform Delay, d1	25.3	21.0		8.1	9.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	22.9	0.6		0.1	0.4	
Delay (s)	48.3	21.6		8.2	9.6	
Level of Service	D	C		A	A	
Approach Delay (s)	40.3			8.2	9.6	
Approach LOS	D			A	A	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	9.1
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	547	2	433	0	0	0	0	270	50	135	361	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6						5.3	5.3	3.7	5.3	
Lane Util. Factor	0.95	0.95						0.95	1.00	1.00	0.95	
Frt	1.00	0.87						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1526						3539	1583	1770	3539	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1526						3539	1583	1770	3539	
Peak-hour factor, PHF	0.84	0.84	0.84	0.25	0.25	0.25	0.78	0.78	0.78	0.85	0.85	0.85
Adj. Flow (vph)	651	2	515	0	0	0	0	346	64	159	425	0
RTOR Reduction (vph)	0	255	0	0	0	0	0	0	50	0	0	0
Lane Group Flow (vph)	586	327	0	0	0	0	0	346	14	159	425	0
Turn Type	Split								Perm	Prot		
Protected Phases	8	8						6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	25.7	25.7						14.0	14.0	10.1	27.8	
Effective Green, g (s)	25.7	25.7						14.0	14.0	10.1	27.8	
Actuated g/C Ratio	0.41	0.41						0.22	0.22	0.16	0.44	
Clearance Time (s)	4.6	4.6						5.3	5.3	3.7	5.3	
Vehicle Extension (s)	3.8	3.8						4.5	4.5	2.0	4.5	
Lane Grp Cap (vph)	681	619						781	350	282	1552	
v/s Ratio Prot	c0.35	0.21						c0.10		c0.09	0.12	
v/s Ratio Perm									0.01			
v/c Ratio	0.86	0.53						0.44	0.04	0.56	0.27	
Uniform Delay, d1	17.2	14.3						21.3	19.4	24.6	11.4	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.1	1.0						0.7	0.1	1.5	0.2	
Delay (s)	28.3	15.3						22.0	19.5	26.2	11.5	
Level of Service	C	B						C	B	C	B	
Approach Delay (s)		21.8			0.0			21.6			15.5	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	13.6
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	604	3	72	0	0	0	0	281	68	160	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6						5.3	5.3	3.7	5.3	
Lane Util. Factor	0.95	0.95						0.95	1.00	1.00	0.95	
Frt	1.00	0.97						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1649						3539	1583	1770	3539	
Flt Permitted	0.95	0.96						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1649						3539	1583	1770	3539	
Peak-hour factor, PHF	0.84	0.84	0.84	0.25	0.25	0.25	0.73	0.73	0.73	0.90	0.90	0.90
Adj. Flow (vph)	719	4	86	0	0	0	0	385	93	178	78	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	70	0	0	0
Lane Group Flow (vph)	410	389	0	0	0	0	0	385	23	178	78	0
Turn Type	Split								Perm	Prot		
Protected Phases	8	8						6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	22.7	22.7						15.1	15.1	10.9	29.7	
Effective Green, g (s)	22.7	22.7						15.1	15.1	10.9	29.7	
Actuated g/C Ratio	0.36	0.36						0.24	0.24	0.17	0.48	
Clearance Time (s)	4.6	4.6						5.3	5.3	3.7	5.3	
Vehicle Extension (s)	3.8	3.8						4.5	4.5	2.0	4.5	
Lane Grp Cap (vph)	612	601						858	384	310	1687	
v/s Ratio Prot	c0.24	0.24						c0.11		c0.10	0.02	
v/s Ratio Perm									0.01			
v/c Ratio	0.67	0.65						0.45	0.06	0.57	0.05	
Uniform Delay, d1	16.6	16.5						20.1	18.1	23.6	8.7	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	2.6						0.6	0.1	1.6	0.0	
Delay (s)	19.7	19.1						20.7	18.2	25.2	8.7	
Level of Service	B	B						C	B	C	A	
Approach Delay (s)		19.4			0.0			20.2			20.2	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	13.6
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	232	169	105	185	65	124	412	173	36	213	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3402		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.84	0.84	0.84	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	109	255	186	125	220	77	153	509	214	44	263	135
RTOR Reduction (vph)	0	0	154	0	26	0	0	0	148	0	0	113
Lane Group Flow (vph)	109	255	32	125	271	0	153	509	66	44	263	22
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	7.1	10.3	10.3	9.8	13.0		12.0	18.4	18.4	3.4	9.8	9.8
Effective Green, g (s)	7.1	10.3	10.3	9.8	13.0		12.0	18.4	18.4	3.4	9.8	9.8
Actuated g/C Ratio	0.12	0.17	0.17	0.16	0.22		0.20	0.31	0.31	0.06	0.16	0.16
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	1.5	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	210	609	272	290	738		355	1087	486	100	579	259
v/s Ratio Prot	c0.06	0.07		c0.07	c0.08		c0.09	c0.14		0.02	0.07	
v/s Ratio Perm			0.02						0.04			0.01
v/c Ratio	0.52	0.42	0.12	0.43	0.37		0.43	0.47	0.14	0.44	0.45	0.09
Uniform Delay, d1	24.8	22.1	21.0	22.5	20.0		21.0	16.8	15.0	27.3	22.6	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.2	0.1	0.4	0.1		0.3	0.1	0.0	1.1	0.2	0.1
Delay (s)	25.7	22.3	21.0	22.9	20.1		21.3	16.9	15.0	28.5	22.8	21.3
Level of Service	C	C	C	C	C		C	B	B	C	C	C
Approach Delay (s)		22.5			20.9			17.2			22.9	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	147	307	316	216	281	102	149	400	181	89	618	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3398		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3398		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.86	0.86	0.86	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	167	349	359	251	327	119	164	440	199	101	702	148
RTOR Reduction (vph)	0	0	297	0	27	0	0	0	150	0	0	92
Lane Group Flow (vph)	167	349	62	251	419	0	164	440	49	101	702	56
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	13.9	16.0	16.0	18.7	20.8		14.5	23.0	23.0	17.4	25.9	25.9
Effective Green, g (s)	13.9	16.0	16.0	18.7	20.8		14.5	23.0	23.0	17.4	25.9	25.9
Actuated g/C Ratio	0.15	0.17	0.17	0.20	0.22		0.16	0.25	0.25	0.19	0.28	0.28
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	1.5	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	264	608	272	356	759		276	874	391	331	985	440
v/s Ratio Prot	0.09	c0.10		c0.14	c0.12		c0.09	0.12		c0.06	c0.20	
v/s Ratio Perm			0.04						0.03			0.04
v/c Ratio	0.63	0.57	0.23	0.71	0.55		0.59	0.50	0.13	0.31	0.71	0.13
Uniform Delay, d1	37.2	35.4	33.2	34.6	32.0		36.6	30.1	27.2	32.6	30.3	25.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.8	0.2	5.1	0.5		2.3	0.2	0.1	0.2	2.1	0.0
Delay (s)	40.8	36.2	33.4	39.8	32.5		38.8	30.3	27.3	32.8	32.3	25.2
Level of Service	D	D	C	D	C		D	C	C	C	C	C
Approach Delay (s)		35.9			35.1			31.3			31.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	93.1	Sum of lost time (s)	27.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	312	91	52	247	26	84	526	78	28	214	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.4	4.4	3.5	4.4		3.5	4.4		3.5	4.4	4.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3489		1770	3470		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3489		1770	3470		1770	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.76	0.76	0.76	0.80	0.80	0.80	0.93	0.93	0.93
Adj. Flow (vph)	173	355	103	68	325	34	105	658	98	30	230	78
RTOR Reduction (vph)	0	0	46	0	6	0	0	7	0	0	0	57
Lane Group Flow (vph)	173	355	57	68	353	0	105	749	0	30	230	21
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	11.9	20.4	20.4	5.9	14.4		7.2	22.4		3.2	18.4	18.4
Effective Green, g (s)	11.9	20.4	20.4	5.9	14.4		7.2	22.4		3.2	18.4	18.4
Actuated g/C Ratio	0.18	0.30	0.30	0.09	0.21		0.11	0.33		0.05	0.27	0.27
Clearance Time (s)	3.5	4.4	4.4	3.5	4.4		3.5	4.4		3.5	4.4	4.4
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	311	1066	477	154	742		188	1148		84	962	430
v/s Ratio Prot	c0.10	0.10		0.04	c0.10		c0.06	c0.22		0.02	0.06	
v/s Ratio Perm			0.04									0.01
v/c Ratio	0.56	0.33	0.12	0.44	0.48		0.56	0.65		0.36	0.24	0.05
Uniform Delay, d1	25.5	18.4	17.1	29.3	23.3		28.7	19.3		31.3	19.2	18.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	0.0	0.7	0.2		2.0	1.0		0.9	0.0	0.0
Delay (s)	26.7	18.4	17.2	30.1	23.5		30.8	20.3		32.2	19.2	18.2
Level of Service	C	B	B	C	C		C	C		C	B	B
Approach Delay (s)		20.5			24.6			21.6			20.2	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	11.4
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	292	87	90	381	52	79	368	57	68	621	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.4	4.4	3.5	4.4		3.5	4.4		3.5	4.4	4.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3475		1770	3468		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3475		1770	3468		1770	3539	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.93	0.93	0.93	0.85	0.85	0.85	0.89	0.89	0.89
Adj. Flow (vph)	159	344	102	97	410	56	93	433	67	76	698	193
RTOR Reduction (vph)	0	0	47	0	7	0	0	8	0	0	0	133
Lane Group Flow (vph)	159	344	55	97	459	0	93	492	0	76	698	60
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.2	23.3	23.3	7.3	18.4		7.1	24.8		6.3	24.0	24.0
Effective Green, g (s)	12.2	23.3	23.3	7.3	18.4		7.1	24.8		6.3	24.0	24.0
Actuated g/C Ratio	0.16	0.30	0.30	0.09	0.24		0.09	0.32		0.08	0.31	0.31
Clearance Time (s)	3.5	4.4	4.4	3.5	4.4		3.5	4.4		3.5	4.4	4.4
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	279	1064	476	167	825		162	1110		144	1096	490
v/s Ratio Prot	c0.09	0.10		0.05	c0.13		c0.05	0.14		0.04	c0.20	
v/s Ratio Perm			0.03									0.04
v/c Ratio	0.57	0.32	0.12	0.58	0.56		0.57	0.44		0.53	0.64	0.12
Uniform Delay, d1	30.2	21.0	19.6	33.6	26.0		33.8	20.9		34.2	23.0	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	0.0	3.3	0.5		3.0	0.1		1.6	0.9	0.0
Delay (s)	31.8	21.1	19.7	36.9	26.4		36.8	21.0		35.8	23.9	19.2
Level of Service	C	C	B	D	C		D	C		D	C	B
Approach Delay (s)		23.7			28.2			23.5			23.9	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	15.8
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	220	30	44	234	39	39	128	56	33	72	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3475		1770	3464		1770	1863	1583	1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00		0.68	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	1770	3475		1770	3464		1258	1863	1583	1187	1764	
Peak-hour factor, PHF	0.80	0.80	0.80	0.86	0.86	0.86	0.67	0.67	0.67	0.88	0.88	0.88
Adj. Flow (vph)	78	275	38	51	272	45	58	191	84	38	82	45
RTOR Reduction (vph)	0	10	0	0	13	0	0	0	64	0	18	0
Lane Group Flow (vph)	78	303	0	51	304	0	58	191	20	38	109	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	3.2	10.5		1.9	9.2		8.2	8.2	8.2	8.2	8.2	
Effective Green, g (s)	3.2	10.5		1.9	9.2		8.2	8.2	8.2	8.2	8.2	
Actuated g/C Ratio	0.09	0.30		0.05	0.27		0.24	0.24	0.24	0.24	0.24	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	164	1055		97	921		298	442	375	281	418	
v/s Ratio Prot	c0.04	0.09		0.03	c0.09			c0.10			0.06	
v/s Ratio Perm							0.05		0.01	0.03		
v/c Ratio	0.48	0.29		0.53	0.33		0.19	0.43	0.05	0.14	0.26	
Uniform Delay, d1	14.9	9.2		15.9	10.2		10.6	11.2	10.2	10.4	10.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.1		2.4	0.1		0.1	0.2	0.0	0.1	0.1	
Delay (s)	15.7	9.3		18.3	10.3		10.7	11.5	10.2	10.5	10.9	
Level of Service	B	A		B	B		B	B	B	B	B	
Approach Delay (s)		10.5			11.4			11.0			10.8	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	34.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	348	50	77	408	43	27	112	71	35	171	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3473		1770	3488		1770	1863	1583	1770	1812	
Flt Permitted	0.95	1.00		0.95	1.00		0.52	1.00	1.00	0.67	1.00	
Satd. Flow (perm)	1770	3473		1770	3488		975	1863	1583	1247	1812	
Peak-hour factor, PHF	0.89	0.89	0.89	0.77	0.77	0.77	0.82	0.82	0.82	0.73	0.73	0.73
Adj. Flow (vph)	30	391	56	100	530	56	33	137	87	48	234	52
RTOR Reduction (vph)	0	10	0	0	7	0	0	0	64	0	7	0
Lane Group Flow (vph)	30	437	0	100	579	0	33	137	23	48	279	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.8	13.4		5.4	17.0		11.5	11.5	11.5	11.5	11.5	
Effective Green, g (s)	1.8	13.4		5.4	17.0		11.5	11.5	11.5	11.5	11.5	
Actuated g/C Ratio	0.04	0.30		0.12	0.38		0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	72	1051		216	1339		253	484	411	324	470	
v/s Ratio Prot	0.02	0.13		c0.06	c0.17			0.07			c0.15	
v/s Ratio Perm							0.03		0.01	0.04		
v/c Ratio	0.42	0.42		0.46	0.43		0.13	0.28	0.05	0.15	0.59	
Uniform Delay, d1	20.7	12.3		18.1	10.1		12.6	13.1	12.3	12.6	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.1		0.6	0.1		0.1	0.1	0.0	0.1	1.3	
Delay (s)	22.2	12.4		18.7	10.2		12.7	13.2	12.3	12.7	15.7	
Level of Service	C	B		B	B		B	B	B	B	B	
Approach Delay (s)		13.0			11.4			12.9			15.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	109	65	256	223	318	98	1297	193	95	825	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9	4.9	3.7	4.9	4.9	3.7	4.9		3.7	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	4987		1770	5034	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	4987		1770	5034	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.81	0.81	0.81	0.88	0.88	0.88
Adj. Flow (vph)	127	127	76	288	251	357	121	1601	238	108	938	67
RTOR Reduction (vph)	0	0	67	0	0	280	0	12	0	0	5	0
Lane Group Flow (vph)	127	127	9	288	251	77	121	1827	0	108	1000	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.5	11.7	11.7	20.5	20.7	20.7	11.2	36.0		10.5	35.3	
Effective Green, g (s)	11.5	11.7	11.7	20.5	20.7	20.7	11.2	36.0		10.5	35.3	
Actuated g/C Ratio	0.12	0.12	0.12	0.21	0.22	0.22	0.12	0.38		0.11	0.37	
Clearance Time (s)	3.7	4.9	4.9	3.7	4.9	4.9	3.7	4.9		3.7	4.9	
Vehicle Extension (s)	2.0	5.4	5.4	2.0	5.3	5.3	2.0	4.5		2.0	5.2	
Lane Grp Cap (vph)	212	432	193	378	764	342	207	1872		194	1853	
v/s Ratio Prot	0.07	0.04		c0.16	c0.07		c0.07	c0.37		0.06	0.20	
v/s Ratio Perm			0.01			0.05						
v/c Ratio	0.60	0.29	0.05	0.76	0.33	0.23	0.58	0.98		0.56	0.54	
Uniform Delay, d1	40.0	38.3	37.2	35.4	31.7	31.0	40.1	29.5		40.5	23.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	0.9	0.2	7.9	0.6	0.8	2.7	15.4		2.0	0.6	
Delay (s)	43.0	39.2	37.4	43.4	32.3	31.8	42.8	45.0		42.5	24.5	
Level of Service	D	D	D	D	C	C	D	D		D	C	
Approach Delay (s)		40.3			35.6			44.8			26.2	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	37.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	7.4
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	195	136	239	282	242	111	905	267	103	1255	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9	4.9	3.7	4.9	4.9	3.7	4.9		3.7	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	4911		1770	5043	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	4911		1770	5043	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.76	0.76	0.76
Adj. Flow (vph)	131	222	155	275	324	278	134	1090	322	136	1651	96
RTOR Reduction (vph)	0	0	132	0	0	214	0	34	0	0	4	0
Lane Group Flow (vph)	131	222	23	275	324	64	134	1378	0	136	1743	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	12.1	15.2	15.2	20.2	23.3	23.3	12.3	35.7		12.4	35.8	
Effective Green, g (s)	12.1	15.2	15.2	20.2	23.3	23.3	12.3	35.7		12.4	35.8	
Actuated g/C Ratio	0.12	0.15	0.15	0.20	0.23	0.23	0.12	0.35		0.12	0.36	
Clearance Time (s)	3.7	4.9	4.9	3.7	4.9	4.9	3.7	4.9		3.7	4.9	
Vehicle Extension (s)	2.0	5.4	5.4	2.0	5.3	5.3	2.0	4.5		2.0	5.2	
Lane Grp Cap (vph)	213	534	239	355	819	366	216	1741		218	1793	
v/s Ratio Prot	0.07	0.06		c0.16	c0.09		0.08	0.28		c0.08	c0.35	
v/s Ratio Perm			0.01			0.04						
v/c Ratio	0.62	0.42	0.10	0.77	0.40	0.18	0.62	0.79		0.62	0.97	
Uniform Delay, d1	42.1	38.7	36.8	38.1	32.7	31.0	42.0	29.2		41.9	32.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	1.3	0.4	9.3	0.7	0.5	3.9	2.8		4.0	15.3	
Delay (s)	45.8	40.0	37.3	47.4	33.5	31.5	45.9	32.0		45.9	47.3	
Level of Service	D	D	D	D	C	C	D	C		D	D	
Approach Delay (s)		40.6			37.2			33.2			47.2	
Approach LOS		D			D			C			D	

Intersection Summary

HCM Average Control Delay	40.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	7.4
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	342	31	64	277	4	482	22	12	2	40	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	5.9	5.9		4.2	4.2			4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3531		1770	1763			1750	
Flt Permitted	0.55	1.00	1.00	0.51	1.00		0.95	1.00			1.00	
Satd. Flow (perm)	1020	3539	1583	955	3531		1770	1763			1750	
Peak-hour factor, PHF	0.91	0.91	0.91	0.83	0.83	0.83	0.77	0.77	0.77	0.78	0.78	0.78
Adj. Flow (vph)	21	376	34	77	334	5	626	29	16	3	51	42
RTOR Reduction (vph)	0	0	26	0	2	0	0	8	0	0	36	0
Lane Group Flow (vph)	21	376	8	77	337	0	626	37	0	0	60	0
Turn Type	Perm		Perm	Perm			Split			Split		
Protected Phases		2			6		8	8		7	7	
Permitted Phases	2		2	6								
Actuated Green, G (s)	14.8	14.8	14.8	14.8	14.8		31.2	31.2			5.9	
Effective Green, g (s)	14.8	14.8	14.8	14.8	14.8		31.2	31.2			5.9	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.47	0.47			0.09	
Clearance Time (s)	5.9	5.9	5.9	5.9	5.9		4.2	4.2			4.2	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			2.0	
Lane Grp Cap (vph)	228	791	354	214	789		834	831			156	
v/s Ratio Prot		c0.11			0.10		c0.35	0.02			c0.03	
v/s Ratio Perm	0.02		0.00	0.08								
v/c Ratio	0.09	0.48	0.02	0.36	0.43		0.75	0.04			0.38	
Uniform Delay, d1	20.4	22.3	20.1	21.7	22.1		14.3	9.4			28.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	0.6	0.0	1.4	0.5		4.1	0.0			0.6	
Delay (s)	20.6	22.9	20.1	23.1	22.6		18.4	9.5			29.0	
Level of Service	C	C	C	C	C		B	A			C	
Approach Delay (s)		22.6			22.7			17.8			29.0	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	14.3
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	462	41	78	403	4	298	29	21	3	54	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	5.9	5.9		4.2	4.2			4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.94			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3534		1770	1746			1734	
Flt Permitted	0.40	1.00	1.00	0.40	1.00		0.95	1.00			1.00	
Satd. Flow (perm)	743	3539	1583	747	3534		1770	1746			1734	
Peak-hour factor, PHF	0.88	0.88	0.88	0.77	0.77	0.77	0.81	0.81	0.81	0.58	0.58	0.58
Adj. Flow (vph)	67	525	47	101	523	5	368	36	26	5	93	100
RTOR Reduction (vph)	0	0	33	0	1	0	0	18	0	0	44	0
Lane Group Flow (vph)	67	525	14	101	527	0	368	44	0	0	154	0
Turn Type	Perm		Perm	Perm			Split			Split		
Protected Phases		2			6		8	8		7	7	
Permitted Phases	2		2	6								
Actuated Green, G (s)	18.4	18.4	18.4	18.4	18.4		20.1	20.1			10.6	
Effective Green, g (s)	18.4	18.4	18.4	18.4	18.4		20.1	20.1			10.6	
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29		0.32	0.32			0.17	
Clearance Time (s)	5.9	5.9	5.9	5.9	5.9		4.2	4.2			4.2	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			2.0	
Lane Grp Cap (vph)	216	1027	459	217	1026		561	554			290	
v/s Ratio Prot		0.15			c0.15		c0.21	0.03			c0.09	
v/s Ratio Perm	0.09		0.01	0.14								
v/c Ratio	0.31	0.51	0.03	0.47	0.51		0.66	0.08			0.53	
Uniform Delay, d1	17.5	18.8	16.1	18.5	18.8		18.7	15.2			24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.1	0.6	0.0	2.1	0.6		3.1	0.1			0.9	
Delay (s)	18.7	19.3	16.1	20.6	19.4		21.7	15.3			25.1	
Level of Service	B	B	B	C	B		C	B			C	
Approach Delay (s)		19.0			19.6			20.8			25.1	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	14.3
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	95	69	195	138	46	60	577	147	46	594	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1745		1770	1793		1770	3431		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1745		1770	1793		1770	3431		1770	3539	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	79	104	76	199	141	47	72	695	177	55	716	106
RTOR Reduction (vph)	0	29	0	0	12	0	0	21	0	0	0	72
Lane Group Flow (vph)	79	151	0	199	176	0	72	851	0	55	716	34
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	5.7	12.2		11.7	18.2		5.5	24.2		3.8	22.5	22.5
Effective Green, g (s)	5.7	12.2		11.7	18.2		5.5	24.2		3.8	22.5	22.5
Actuated g/C Ratio	0.08	0.17		0.17	0.26		0.08	0.34		0.05	0.32	0.32
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	1.0	2.0		1.5	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	143	302		294	463		138	1178		95	1129	505
v/s Ratio Prot	0.04	c0.09		c0.11	0.10		c0.04	c0.25		0.03	0.20	
v/s Ratio Perm												0.02
v/c Ratio	0.55	0.50		0.68	0.38		0.52	0.72		0.58	0.63	0.07
Uniform Delay, d1	31.2	26.4		27.6	21.5		31.2	20.2		32.6	20.5	16.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.6	0.5		4.8	0.2		1.6	1.9		5.2	0.9	0.0
Delay (s)	33.8	26.9		32.4	21.7		32.9	22.1		37.8	21.4	16.7
Level of Service	C	C		C	C		C	C		D	C	B
Approach Delay (s)		29.0			27.2			22.9			21.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	13.3
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	208	70	106	175	39	77	648	127	57	604	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1793		1770	1812		1770	3452		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1793		1770	1812		1770	3452		1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.86	0.86	0.86	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	147	221	74	123	203	45	88	736	144	65	686	198
RTOR Reduction (vph)	0	12	0	0	9	0	0	15	0	0	0	134
Lane Group Flow (vph)	147	283	0	123	239	0	88	865	0	65	686	64
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	9.9	17.4		9.2	16.7		6.1	25.0		5.4	24.3	24.3
Effective Green, g (s)	9.9	17.4		9.2	16.7		6.1	25.0		5.4	24.3	24.3
Actuated g/C Ratio	0.13	0.23		0.12	0.22		0.08	0.33		0.07	0.32	0.32
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	1.0	2.0		1.5	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	232	413		215	400		143	1142		126	1138	509
v/s Ratio Prot	c0.08	c0.16		0.07	0.13		c0.05	c0.25		0.04	0.19	
v/s Ratio Perm												0.04
v/c Ratio	0.63	0.68		0.57	0.60		0.62	0.76		0.52	0.60	0.13
Uniform Delay, d1	31.1	26.6		31.3	26.4		33.6	22.6		33.8	21.6	18.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.1	3.7		2.3	1.6		5.4	2.6		1.5	0.6	0.0
Delay (s)	35.2	30.3		33.6	28.1		39.0	25.2		35.3	22.2	18.2
Level of Service	D	C		C	C		D	C		D	C	B
Approach Delay (s)		32.0			29.9			26.4			22.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	110	16	54	84	35	21	610	46	27	248	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1827		1770	1780		1770	3502		1770	3494	
Flt Permitted	0.67	1.00		0.64	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1241	1827		1193	1780		1770	3502		1770	3494	
Peak-hour factor, PHF	0.68	0.68	0.68	0.84	0.84	0.84	0.69	0.69	0.69	0.92	0.92	0.92
Adj. Flow (vph)	81	162	24	64	100	42	30	884	67	29	270	25
RTOR Reduction (vph)	0	5	0	0	14	0	0	4	0	0	5	0
Lane Group Flow (vph)	81	181	0	64	128	0	30	947	0	29	290	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	10.9	10.9		10.9	10.9		1.7	19.6		1.7	19.6	
Effective Green, g (s)	10.9	10.9		10.9	10.9		1.7	19.6		1.7	19.6	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.04	0.43		0.04	0.43	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	295	435		284	424		66	1499		66	1495	
v/s Ratio Prot		c0.10			0.07		c0.02	c0.27		0.02	0.08	
v/s Ratio Perm	0.07			0.05								
v/c Ratio	0.27	0.42		0.23	0.30		0.45	0.63		0.44	0.19	
Uniform Delay, d1	14.2	14.8		14.1	14.3		21.6	10.3		21.6	8.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.1	0.1		1.8	0.6		1.7	0.0	
Delay (s)	14.4	15.0		14.2	14.5		23.4	10.9		23.3	8.2	
Level of Service	B	B		B	B		C	B		C	A	
Approach Delay (s)		14.8			14.4			11.3			9.5	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	13.6
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	75	29	61	98	34	31	503	24	30	789	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1785		1770	1791		1770	3515		1770	3513	
Flt Permitted	0.65	1.00		0.67	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1204	1785		1244	1791		1770	3515		1770	3513	
Peak-hour factor, PHF	0.74	0.74	0.74	0.75	0.75	0.75	0.88	0.88	0.88	0.80	0.80	0.80
Adj. Flow (vph)	41	101	39	81	131	45	35	572	27	38	986	52
RTOR Reduction (vph)	0	12	0	0	12	0	0	2	0	0	3	0
Lane Group Flow (vph)	41	128	0	81	164	0	35	597	0	38	1035	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	10.7	10.7		10.7	10.7		1.9	20.6		3.0	21.7	
Effective Green, g (s)	10.7	10.7		10.7	10.7		1.9	20.6		3.0	21.7	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.04	0.43		0.06	0.45	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	269	399		278	400		70	1512		111	1591	
v/s Ratio Prot		0.07			c0.09		0.02	0.17		c0.02	c0.29	
v/s Ratio Perm	0.03			0.07								
v/c Ratio	0.15	0.32		0.29	0.41		0.50	0.39		0.34	0.65	
Uniform Delay, d1	15.0	15.6		15.5	15.9		22.5	9.4		21.5	10.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.2	0.3		2.0	0.1		0.7	0.7	
Delay (s)	15.1	15.7		15.7	16.2		24.6	9.4		22.2	10.9	
Level of Service	B	B		B	B		C	A		C	B	
Approach Delay (s)		15.6			16.0			10.3			11.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	8.6
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	58	21	32	65	28	17	213	22	25	232	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.9	4.9		4.9	4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1836		1770	1838	
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	0.60	1.00		0.60	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1863	1583	1112	1836		1122	1838	
Peak-hour factor, PHF	0.88	0.88	0.88	0.82	0.82	0.82	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	26	66	24	39	79	34	18	229	24	29	273	27
RTOR Reduction (vph)	0	0	20	0	0	29	0	5	0	0	5	0
Lane Group Flow (vph)	26	66	4	39	79	5	18	248	0	29	295	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	2.9	2.9	2.9	2.9	2.9	2.9	6.7	6.7		6.7	6.7	
Effective Green, g (s)	2.9	2.9	2.9	2.9	2.9	2.9	6.7	6.7		6.7	6.7	
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.35		0.35	0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.9	4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	284	284	242	284	284	242	392	647		396	648	
v/s Ratio Prot		0.04			c0.04			0.13			c0.16	
v/s Ratio Perm	0.01		0.00	0.02		0.00	0.02			0.03		
v/c Ratio	0.09	0.23	0.02	0.14	0.28	0.02	0.05	0.38		0.07	0.45	
Uniform Delay, d1	6.9	7.1	6.8	7.0	7.1	6.8	4.0	4.6		4.1	4.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.1		0.0	0.2	
Delay (s)	7.0	7.2	6.8	7.0	7.3	6.9	4.1	4.7		4.1	4.9	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		7.1			7.1			4.7			4.9	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	19.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	104	18	34	125	20	19	88	40	32	152	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.9	4.9		4.9	4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1775		1770	1810	
Flt Permitted	0.80	1.00	1.00	0.80	1.00	1.00	0.66	1.00		0.66	1.00	
Satd. Flow (perm)	1490	1863	1583	1490	1863	1583	1221	1775		1221	1810	
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	25	113	20	41	151	24	24	111	51	46	217	51
RTOR Reduction (vph)	0	0	15	0	0	18	0	26	0	0	13	0
Lane Group Flow (vph)	25	113	5	41	151	6	24	136	0	46	255	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.1	6.1		6.1	6.1	
Effective Green, g (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.1	6.1		6.1	6.1	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.30	0.30		0.30	0.30	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.9	4.9		4.9	4.9	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	363	454	386	363	454	386	363	528		363	539	
v/s Ratio Prot		0.06			c0.08			0.08			c0.14	
v/s Ratio Perm	0.02		0.00	0.03		0.00	0.02			0.04		
v/c Ratio	0.07	0.25	0.01	0.11	0.33	0.02	0.07	0.26		0.13	0.47	
Uniform Delay, d1	6.0	6.2	5.9	6.0	6.4	5.9	5.2	5.5		5.3	5.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.1		0.1	0.2	
Delay (s)	6.0	6.3	5.9	6.1	6.5	5.9	5.2	5.6		5.3	6.1	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		6.2			6.4			5.5			6.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	20.5	Sum of lost time (s)	9.4
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	69	54	33	57	21	66	1656	38	39	1081	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.2		3.7	4.9		3.7	4.9	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.93			0.97		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1740			1788		1770	5068		1770	5021	
Flt Permitted	0.79	1.00			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1478	1740			1544		1770	5068		1770	5021	
Peak-hour factor, PHF	0.89	0.89	0.89	0.96	0.96	0.96	0.80	0.80	0.80	0.74	0.74	0.74
Adj. Flow (vph)	62	78	61	34	59	22	82	2070	48	53	1461	134
RTOR Reduction (vph)	0	46	0	0	14	0	0	2	0	0	11	0
Lane Group Flow (vph)	62	93	0	0	101	0	82	2116	0	53	1584	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	6.2	6.2			6.5		4.2	27.2		3.6	26.6	
Effective Green, g (s)	6.2	6.2			6.5		4.2	27.2		3.6	26.6	
Actuated g/C Ratio	0.12	0.12			0.13		0.08	0.54		0.07	0.53	
Clearance Time (s)	4.5	4.5			4.2		3.7	4.9		3.7	4.9	
Vehicle Extension (s)	0.2	0.2			0.2		2.0	5.7		2.0	5.7	
Lane Grp Cap (vph)	183	215			200		148	2751		127	2666	
v/s Ratio Prot		0.05					c0.05	c0.42		0.03	0.32	
v/s Ratio Perm	0.04				c0.07							
v/c Ratio	0.34	0.43			0.51		0.55	0.77		0.42	0.59	
Uniform Delay, d1	20.1	20.3			20.3		22.1	9.0		22.2	8.1	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5			0.7		2.5	1.7		0.8	0.6	
Delay (s)	20.5	20.8			21.0		24.6	10.7		23.1	8.7	
Level of Service	C	C			C		C	B		C	A	
Approach Delay (s)		20.7			21.0			11.2			9.1	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	7.9
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	91	36	61	54	33	74	1164	37	86	1644	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.2		3.7	4.9		3.7	4.9	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.96			0.97		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784			1770		1770	5062		1770	5054	
Flt Permitted	0.63	1.00			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1169	1784			1438		1770	5062		1770	5054	
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.96	0.96	0.96	0.82	0.82	0.82
Adj. Flow (vph)	95	112	44	68	60	37	77	1212	39	105	2005	85
RTOR Reduction (vph)	0	23	0	0	16	0	0	3	0	0	5	0
Lane Group Flow (vph)	95	133	0	0	149	0	77	1248	0	105	2085	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	7.1	7.1			7.4		4.4	27.6		6.2	29.4	
Effective Green, g (s)	7.1	7.1			7.4		4.4	27.6		6.2	29.4	
Actuated g/C Ratio	0.13	0.13			0.14		0.08	0.51		0.11	0.54	
Clearance Time (s)	4.5	4.5			4.2		3.7	4.9		3.7	4.9	
Vehicle Extension (s)	0.2	0.2			0.2		2.0	5.7		2.0	5.7	
Lane Grp Cap (vph)	154	235			197		144	2587		203	2752	
v/s Ratio Prot		0.07					0.04	0.25		c0.06	c0.41	
v/s Ratio Perm	0.08				c0.10							
v/c Ratio	0.62	0.57			0.75		0.53	0.48		0.52	0.76	
Uniform Delay, d1	22.2	22.0			22.4		23.8	8.6		22.5	9.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	1.9			13.5		1.9	0.4		0.9	1.6	
Delay (s)	27.2	23.9			35.9		25.7	8.9		23.4	11.1	
Level of Service	C	C			D		C	A		C	B	
Approach Delay (s)		25.2			35.9			9.9			11.7	
Approach LOS		C			D			A			B	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	7.9
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	26	5	21	26	28	2	707	28	18	287	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.92		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1818		1770	1719		1770	3519		1770	3525	
Flt Permitted	0.83	1.00		0.83	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1552	1818		1552	1719		1770	3519		1770	3525	
Peak-hour factor, PHF	0.62	0.62	0.62	0.75	0.75	0.75	0.70	0.70	0.70	0.87	0.87	0.87
Adj. Flow (vph)	10	42	8	28	35	37	3	1010	40	21	330	9
RTOR Reduction (vph)	0	7	0	0	32	0	0	2	0	0	2	0
Lane Group Flow (vph)	10	43	0	28	40	0	3	1048	0	21	337	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	4.8	4.8		4.8	4.8		2.4	18.2		0.7	16.5	
Effective Green, g (s)	4.8	4.8		4.8	4.8		2.4	18.2		0.7	16.5	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.06	0.49		0.02	0.44	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	200	234		200	221		114	1717		33	1559	
v/s Ratio Prot		c0.02			0.02		0.00	c0.30		0.01	c0.10	
v/s Ratio Perm	0.01			0.02								
v/c Ratio	0.05	0.18		0.14	0.18		0.03	0.61		0.64	0.22	
Uniform Delay, d1	14.3	14.5		14.4	14.5		16.4	7.0		18.2	6.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.1	0.1		0.0	0.5		25.9	0.0	
Delay (s)	14.3	14.6		14.5	14.6		16.4	7.4		44.1	6.4	
Level of Service	B	B		B	B		B	A		D	A	
Approach Delay (s)		14.6			14.6			7.4			8.6	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	14.6
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	38	18	59	27	28	15	608	27	20	715	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.92		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1772		1770	1721		1770	3517		1770	3532	
Flt Permitted	0.71	1.00		0.71	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1324	1772		1317	1721		1770	3517		1770	3532	
Peak-hour factor, PHF	0.73	0.73	0.73	0.78	0.78	0.78	0.84	0.84	0.84	0.79	0.79	0.79
Adj. Flow (vph)	15	52	25	76	35	36	18	724	32	25	905	13
RTOR Reduction (vph)	0	17	0	0	30	0	0	2	0	0	1	0
Lane Group Flow (vph)	15	60	0	76	41	0	18	754	0	25	917	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	5.9	5.9		5.9	5.9		0.7	17.3		0.7	17.3	
Effective Green, g (s)	5.9	5.9		5.9	5.9		0.7	17.3		0.7	17.3	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.02	0.46		0.02	0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	208	279		207	271		33	1623		33	1629	
v/s Ratio Prot		0.03			0.02		c0.01	0.21		0.01	c0.26	
v/s Ratio Perm	0.01			c0.06								
v/c Ratio	0.07	0.22		0.37	0.15		0.55	0.46		0.76	0.56	
Uniform Delay, d1	13.5	13.8		14.1	13.6		18.2	6.9		18.3	7.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.4	0.1		9.5	0.1		59.5	0.3	
Delay (s)	13.5	13.9		14.5	13.7		27.7	7.0		77.9	7.6	
Level of Service	B	B		B	B		C	A		E	A	
Approach Delay (s)		13.9			14.1			7.5			9.5	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	13.6
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	17	35	3	9	46	14	13	181	11	13	177	2
Peak Hour Factor	0.75	0.75	0.75	0.82	0.82	0.82	0.71	0.71	0.71	0.76	0.76	0.76
Hourly flow rate (vph)	23	47	4	11	56	17	18	255	15	17	233	3

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	73	84	18	270	17	236
Volume Left (vph)	23	11	18	0	17	0
Volume Right (vph)	4	17	0	15	0	3
Hadj (s)	0.06	-0.06	0.53	-0.01	0.53	0.03
Departure Headway (s)	5.4	5.3	5.7	5.2	5.8	5.3
Degree Utilization, x	0.11	0.12	0.03	0.39	0.03	0.34
Capacity (veh/h)	594	610	604	671	597	660
Control Delay (s)	9.1	9.0	7.7	10.3	7.7	9.8
Approach Delay (s)	9.1	9.0	10.1		9.6	
Approach LOS	A	A	B		A	

Intersection Summary			
Delay	9.7		
HCM Level of Service	A		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	20	58	21	32	65	28	17	213	22	25	237	23
Peak Hour Factor	0.88	0.88	0.88	0.82	0.82	0.82	0.93	0.93	0.93	0.85	0.85	0.85
Hourly flow rate (vph)	23	66	24	39	79	34	18	229	24	29	279	27

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	112	152	18	253	29	306
Volume Left (vph)	23	39	18	0	29	0
Volume Right (vph)	24	34	0	24	0	27
Hadj (s)	-0.05	-0.05	0.53	-0.03	0.53	-0.03
Departure Headway (s)	5.7	5.7	6.3	5.7	6.2	5.6
Degree Utilization, x	0.18	0.24	0.03	0.40	0.05	0.48
Capacity (veh/h)	556	571	546	603	554	617
Control Delay (s)	10.0	10.4	8.3	11.2	8.3	12.4
Approach Delay (s)	10.0	10.4	11.0		12.1	
Approach LOS	A	B	B		B	

Intersection Summary			
Delay	11.2		
HCM Level of Service	B		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	1140	58	116	924	245	78	61	273	347	142	758
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	5.3		3.7	5.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	0.88	1.00	0.95	0.95
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5048		1770	5085	1583	1770	1863	2787	1770	1586	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5048		1770	5085	1583	1770	1863	2787	1770	1586	1504
Peak-hour factor, PHF	0.82	0.82	0.82	0.88	0.88	0.88	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	139	1390	71	132	1050	278	87	68	303	408	167	892
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	259	0	84	382
Lane Group Flow (vph)	139	1455	0	132	1050	278	87	68	44	408	458	135
Turn Type	Prot			Prot		Free	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						Free			3			4
Actuated Green, G (s)	10.0	25.8		10.0	25.8	84.0	12.1	12.1	12.1	19.1	19.1	19.1
Effective Green, g (s)	10.0	25.8		10.0	25.8	84.0	12.1	12.1	12.1	19.1	19.1	19.1
Actuated g/C Ratio	0.12	0.31		0.12	0.31	1.00	0.14	0.14	0.14	0.23	0.23	0.23
Clearance Time (s)	3.7	5.3		3.7	5.3		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.5		4.5	4.5	4.5	7.1	7.1	7.1
Lane Grp Cap (vph)	211	1550		211	1562	1583	255	268	401	402	361	342
v/s Ratio Prot	0.08	c0.29		0.07	c0.21		c0.05	0.04		0.23	c0.29	
v/s Ratio Perm						0.18			0.02			0.09
v/c Ratio	0.66	0.94		0.63	0.67	0.18	0.34	0.25	0.11	1.01	1.27	0.39
Uniform Delay, d1	35.4	28.3		35.2	25.4	0.0	32.4	31.9	31.3	32.5	32.5	27.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	11.4		4.1	1.4	0.2	1.4	0.9	0.2	48.7	140.8	2.7
Delay (s)	40.9	39.8		39.3	26.8	0.2	33.7	32.8	31.5	81.2	173.3	30.2
Level of Service	D	D		D	C	A	C	C	C	F	F	C
Approach Delay (s)		39.9			22.9			32.1			97.2	
Approach LOS		D			C			C			F	

Intersection Summary

HCM Average Control Delay	51.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	13.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	1439	108	188	1155	690	74	51	216	276	207	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	5.3		3.7	5.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	0.88	1.00	0.95	0.95
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5032		1770	5085	1583	1770	1863	2787	1770	1624	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5032		1770	5085	1583	1770	1863	2787	1770	1624	1504
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.80	0.80	0.80	0.91	0.91	0.91
Adj. Flow (vph)	280	1515	114	207	1269	758	92	64	270	303	227	742
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	231	0	46	363
Lane Group Flow (vph)	280	1620	0	207	1269	758	92	64	39	303	456	104
Turn Type	Prot			Prot		Free	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						Free			3			4
Actuated Green, G (s)	11.3	25.8		12.3	26.8	86.6	12.5	12.5	12.5	19.0	19.0	19.0
Effective Green, g (s)	11.3	25.8		12.3	26.8	86.6	12.5	12.5	12.5	19.0	19.0	19.0
Actuated g/C Ratio	0.13	0.30		0.14	0.31	1.00	0.14	0.14	0.14	0.22	0.22	0.22
Clearance Time (s)	3.7	5.3		3.7	5.3		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.5		4.5	4.5	4.5	7.1	7.1	7.1
Lane Grp Cap (vph)	231	1499		251	1574	1583	255	269	402	388	356	330
v/s Ratio Prot	c0.16	c0.32		0.12	c0.25		0.05	0.03		0.17	c0.28	
v/s Ratio Perm						c0.48			0.01			0.07
v/c Ratio	1.21	1.08		0.82	0.81	0.48	0.36	0.24	0.10	0.78	1.28	0.32
Uniform Delay, d1	37.6	30.4		36.1	27.5	0.0	33.4	32.8	32.2	31.8	33.8	28.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	128.5	48.4		18.5	3.5	1.0	1.5	0.8	0.2	12.8	146.3	2.0
Delay (s)	166.2	78.8		54.6	31.0	1.0	34.9	33.6	32.3	44.7	180.1	30.3
Level of Service	F	E		D	C	A	C	C	C	D	F	C
Approach Delay (s)		91.6			23.0			33.1			92.8	
Approach LOS		F			C			C			F	

Intersection Summary

HCM Average Control Delay	61.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	7.7
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1308	452	0	1067	12	479	16	705	17	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9			5.3	5.3	4.6	4.6	4.6	3.7		3.7
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.95	1.00	1.00		1.00
Frt	1.00	0.96			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00	0.95		1.00
Satd. Flow (prot)	1770	4889			5085	1583	1681	1691	1583	1770		1583
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00	0.61		1.00
Satd. Flow (perm)	1770	4889			5085	1583	1681	1691	1583	1129		1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.76	0.76	0.76	0.75	0.75	0.75
Adj. Flow (vph)	12	1521	526	0	1199	13	630	21	928	23	0	37
RTOR Reduction (vph)	0	42	0	0	0	3	0	0	251	0	0	35
Lane Group Flow (vph)	12	2005	0	0	1199	10	328	323	677	23	0	2
Turn Type	Prot					Prot	Split		Perm	custom		custom
Protected Phases	5	2			6	6	3	3				
Permitted Phases									3	4		4
Actuated Green, G (s)	1.3	58.3			52.9	52.9	25.5	25.5	25.5	6.6		6.6
Effective Green, g (s)	1.3	58.3			52.9	52.9	25.5	25.5	25.5	6.6		6.6
Actuated g/C Ratio	0.01	0.56			0.51	0.51	0.25	0.25	0.25	0.06		0.06
Clearance Time (s)	3.7	4.9			5.3	5.3	4.6	4.6	4.6	3.7		3.7
Vehicle Extension (s)	2.0	5.1			4.2	4.2	5.0	5.0	5.0	1.5		1.5
Lane Grp Cap (vph)	22	2751			2596	808	414	416	390	72		101
v/s Ratio Prot	0.01	c0.41			0.24	0.01	0.20	0.19				
v/s Ratio Perm									c0.43	c0.02		0.00
v/c Ratio	0.55	0.73			0.46	0.01	0.79	0.78	1.74	0.32		0.02
Uniform Delay, d1	50.9	16.8			16.2	12.5	36.6	36.4	39.0	46.4		45.5
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	14.0	1.2			0.2	0.0	11.4	10.2	341.7	0.9		0.0
Delay (s)	64.8	18.0			16.4	12.5	48.0	46.6	380.7	47.3		45.5
Level of Service	E	B			B	B	D	D	F	D		D
Approach Delay (s)		18.3			16.4			243.2			46.2	
Approach LOS		B			B			F			D	

Intersection Summary

HCM Average Control Delay	90.5	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	1168	686	0	1944	31	301	9	356	18	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9			5.3	5.3	4.6	4.6	4.6	3.7		3.7
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.95	1.00	1.00		1.00
Frt	1.00	0.94			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00	0.95		1.00
Satd. Flow (prot)	1770	4803			5085	1583	1681	1690	1583	1770		1583
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00	0.66		1.00
Satd. Flow (perm)	1770	4803			5085	1583	1681	1690	1583	1221		1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.86	0.86	0.86	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	73	1229	722	0	2260	36	331	10	391	19	0	65
RTOR Reduction (vph)	0	67	0	0	0	6	0	0	279	0	0	61
Lane Group Flow (vph)	73	1884	0	0	2260	30	169	172	112	19	0	4
Turn Type	Prot					Prot	Split		Perm	custom		custom
Protected Phases	5	2			6	6	3	3				
Permitted Phases									3	4		4
Actuated Green, G (s)	7.1	56.6			45.4	45.4	19.9	19.9	19.9	6.1		6.1
Effective Green, g (s)	7.1	56.6			45.4	45.4	19.9	19.9	19.9	6.1		6.1
Actuated g/C Ratio	0.07	0.59			0.47	0.47	0.21	0.21	0.21	0.06		0.06
Clearance Time (s)	3.7	4.9			5.3	5.3	4.6	4.6	4.6	3.7		3.7
Vehicle Extension (s)	2.0	5.1			4.2	4.2	5.0	5.0	5.0	1.5		1.5
Lane Grp Cap (vph)	131	2838			2410	750	349	351	329	78		101
v/s Ratio Prot	0.04	c0.39			c0.44	0.02	0.10	c0.10				
v/s Ratio Perm									0.07	c0.02		0.00
v/c Ratio	0.56	0.66			0.94	0.04	0.48	0.49	0.34	0.24		0.04
Uniform Delay, d1	42.8	13.2			23.9	13.5	33.4	33.5	32.4	42.7		42.1
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.9	0.8			8.0	0.0	2.2	2.2	1.3	0.6		0.1
Delay (s)	45.7	14.0			31.8	13.5	35.6	35.7	33.7	43.2		42.2
Level of Service	D	B			C	B	D	D	C	D		D
Approach Delay (s)		15.1			31.5			34.6			42.4	
Approach LOS		B			C			C			D	

Intersection Summary

HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	18.5
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	765	1124	116	52	585	118	229	485	82	90	210	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.9	4.9	4.6	4.9	4.9	5.3	5.3		5.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91		1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.94	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	5085	1583	3433	4975		1770	3203	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	5085	1583	3433	4975		1770	3203	1441
Peak-hour factor, PHF	0.93	0.93	0.93	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Adj. Flow (vph)	823	1209	125	58	650	131	305	647	109	102	239	309
RTOR Reduction (vph)	0	0	47	0	0	76	0	17	0	0	58	144
Lane Group Flow (vph)	823	1209	78	58	650	55	305	739	0	102	320	26
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	3	8		7	4		6	6		2	2	
Permitted Phases			8			4						2
Actuated Green, G (s)	15.7	35.9	35.9	4.7	24.9	24.9	21.3	21.3		15.0	15.0	15.0
Effective Green, g (s)	15.7	35.9	35.9	4.7	24.9	24.9	21.3	21.3		15.0	15.0	15.0
Actuated g/C Ratio	0.16	0.37	0.37	0.05	0.26	0.26	0.22	0.22		0.15	0.15	0.15
Clearance Time (s)	4.6	4.9	4.9	4.6	4.9	4.9	5.3	5.3		5.3	5.3	5.3
Vehicle Extension (s)	1.0	2.0	2.0	0.5	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	556	1310	586	166	1305	406	754	1092		274	495	223
v/s Ratio Prot	c0.24	c0.34		0.02	c0.13		0.09	c0.15		0.06	c0.10	
v/s Ratio Perm			0.05			0.03						0.02
v/c Ratio	1.48	0.92	0.13	0.35	0.50	0.14	0.40	0.68		0.37	0.65	0.12
Uniform Delay, d1	40.6	29.2	20.2	44.7	30.7	27.8	32.4	34.7		36.8	38.5	35.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	225.7	10.7	0.0	0.5	0.1	0.1	0.1	1.3		0.3	2.2	0.1
Delay (s)	266.3	40.0	20.3	45.1	30.8	27.8	32.5	36.0		37.1	40.7	35.4
Level of Service	F	D	C	D	C	C	C	D		D	D	D
Approach Delay (s)		125.2			31.4			35.0			38.7	
Approach LOS		F			C			D			D	

Intersection Summary

HCM Average Control Delay	76.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	494	823	206	177	1070	104	268	381	59	134	592	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.9	4.9	4.6	4.9	4.9	5.3	5.3		5.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91		1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.96	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	5085	1583	3433	4983		1770	3240	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	5085	1583	3433	4983		1770	3240	1441
Peak-hour factor, PHF	0.93	0.93	0.93	0.79	0.79	0.79	0.88	0.88	0.88	0.85	0.85	0.85
Adj. Flow (vph)	531	885	222	224	1354	132	305	433	67	158	696	727
RTOR Reduction (vph)	0	0	129	0	0	35	0	17	0	0	29	218
Lane Group Flow (vph)	531	885	93	224	1354	97	305	483	0	158	958	218
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	3	8		7	4		6	6		2	2	
Permitted Phases			8			4						2
Actuated Green, G (s)	15.4	35.1	35.1	15.4	35.1	35.1	17.6	17.6		34.7	34.7	34.7
Effective Green, g (s)	15.4	35.1	35.1	15.4	35.1	35.1	17.6	17.6		34.7	34.7	34.7
Actuated g/C Ratio	0.13	0.29	0.29	0.13	0.29	0.29	0.14	0.14		0.28	0.28	0.28
Clearance Time (s)	4.6	4.9	4.9	4.6	4.9	4.9	5.3	5.3		5.3	5.3	5.3
Vehicle Extension (s)	1.0	2.0	2.0	0.5	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	430	1011	452	430	1452	452	492	714		500	915	407
v/s Ratio Prot	c0.15	0.25		0.07	c0.27		0.09	c0.10		0.09	c0.30	
v/s Ratio Perm			0.06			0.06						0.15
v/c Ratio	1.23	0.88	0.21	0.52	0.93	0.21	0.62	0.68		0.32	1.05	0.54
Uniform Delay, d1	53.8	41.8	33.3	50.3	42.7	33.4	49.5	49.9		34.7	44.1	37.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	124.4	8.3	0.1	0.5	11.0	0.1	1.6	2.0		0.1	42.9	0.7
Delay (s)	178.1	50.2	33.4	50.8	53.7	33.5	51.1	52.0		34.9	87.0	38.0
Level of Service	F	D	C	D	D	C	D	D		C	F	D
Approach Delay (s)		89.4			51.8			51.6			68.3	
Approach LOS		F			D			D			E	

Intersection Summary

HCM Average Control Delay	67.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	122.9	Sum of lost time (s)	20.1
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	284	1007	49	50	548	45	55	66	95	13	40	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	5028		1770	1698		1770	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3515		1770	5028		1770	1698		1770	1640	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	330	1171	57	58	637	52	68	81	117	17	53	207
RTOR Reduction (vph)	0	3	0	0	10	0	0	51	0	0	155	0
Lane Group Flow (vph)	330	1225	0	58	679	0	68	147	0	17	105	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	16.9	35.0		3.9	22.0		8.5	16.4		0.9	9.3	
Effective Green, g (s)	16.9	35.0		3.9	22.0		8.5	16.4		0.9	9.3	
Actuated g/C Ratio	0.23	0.47		0.05	0.30		0.11	0.22		0.01	0.12	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	4.5		4.5	4.5	
Vehicle Extension (s)	1.5	2.0		1.0	2.0		1.5	1.5		1.0	1.5	
Lane Grp Cap (vph)	402	1651		93	1485		202	374		21	205	
v/s Ratio Prot	c0.19	c0.35		0.03	0.14		0.04	c0.09		0.01	c0.06	
v/s Ratio Perm												
v/c Ratio	0.82	0.74		0.62	0.46		0.34	0.39		0.81	0.51	
Uniform Delay, d1	27.4	16.1		34.6	21.4		30.4	24.8		36.7	30.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.1	1.6		9.0	0.1		0.4	0.2		104.9	0.9	
Delay (s)	39.4	17.7		43.6	21.5		30.8	25.1		141.6	31.4	
Level of Service	D	B		D	C		C	C		F	C	
Approach Delay (s)		22.3			23.2			26.5			38.1	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	8.5
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	819	34	85	1255	10	18	11	57	3	25	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3518		1770	5079		1770	1629		1770	1671	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3518		1770	5079		1770	1629		1770	1671	
Peak-hour factor, PHF	0.91	0.91	0.91	0.78	0.78	0.78	0.80	0.80	0.80	0.71	0.71	0.71
Adj. Flow (vph)	78	900	37	109	1609	13	22	14	71	4	35	76
RTOR Reduction (vph)	0	2	0	0	1	0	0	63	0	0	70	0
Lane Group Flow (vph)	78	935	0	109	1621	0	22	22	0	4	41	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	5.4	29.0		5.9	29.5		2.8	6.5		0.8	5.0	
Effective Green, g (s)	5.4	29.0		5.9	29.5		2.8	6.5		0.8	5.0	
Actuated g/C Ratio	0.09	0.48		0.10	0.49		0.05	0.11		0.01	0.08	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	4.5		4.5	4.5	
Vehicle Extension (s)	1.5	2.0		1.0	2.0		1.5	1.5		1.0	1.5	
Lane Grp Cap (vph)	158	1686		173	2477		82	175		23	138	
v/s Ratio Prot	0.04	0.27		c0.06	c0.32		c0.01	c0.01		0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.49	0.55		0.63	0.65		0.27	0.12		0.17	0.30	
Uniform Delay, d1	26.2	11.2		26.3	11.7		27.9	24.4		29.5	26.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.2		5.4	0.5		0.6	0.1		1.3	0.4	
Delay (s)	27.1	11.4		31.6	12.1		28.5	24.5		30.8	26.5	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		12.6			13.4			25.4			26.7	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1169	19	98	554	45	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.0	5.0	4.0	
Lane Util. Factor	0.91		1.00	0.91	1.00	
Frt	1.00		1.00	1.00	0.92	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	5073		1770	5085	1683	
Flt Permitted	1.00		0.95	1.00	0.98	
Satd. Flow (perm)	5073		1770	5085	1683	
Peak-hour factor, PHF	0.83	0.83	0.85	0.85	0.77	0.77
Adj. Flow (vph)	1408	23	115	652	58	78
RTOR Reduction (vph)	1	0	0	0	51	0
Lane Group Flow (vph)	1430	0	115	652	85	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	36.8		6.7	47.5	8.2	
Effective Green, g (s)	36.8		6.7	47.5	8.2	
Actuated g/C Ratio	0.57		0.10	0.73	0.13	
Clearance Time (s)	5.0		4.0	5.0	4.0	
Vehicle Extension (s)	4.0		1.0	4.0	1.5	
Lane Grp Cap (vph)	2885		183	3733	213	
v/s Ratio Prot	c0.28		c0.06	0.13	c0.05	
v/s Ratio Perm						
v/c Ratio	0.50		0.63	0.17	0.40	
Uniform Delay, d1	8.4		27.8	2.6	26.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.2		4.8	0.0	0.5	
Delay (s)	8.6		32.6	2.7	26.4	
Level of Service	A		C	A	C	
Approach Delay (s)	8.6			7.1	26.4	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	820	68	69	1258	35	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.0	5.0	4.0	
Lane Util. Factor	0.91		1.00	0.91	1.00	
Frt	0.99		1.00	1.00	0.92	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	5027		1770	5085	1676	
Flt Permitted	1.00		0.95	1.00	0.98	
Satd. Flow (perm)	5027		1770	5085	1676	
Peak-hour factor, PHF	0.94	0.94	0.90	0.90	0.83	0.83
Adj. Flow (vph)	872	72	77	1398	42	66
RTOR Reduction (vph)	6	0	0	0	59	0
Lane Group Flow (vph)	938	0	77	1398	49	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	25.3		3.7	33.0	5.0	
Effective Green, g (s)	25.3		3.7	33.0	5.0	
Actuated g/C Ratio	0.54		0.08	0.70	0.11	
Clearance Time (s)	5.0		4.0	5.0	4.0	
Vehicle Extension (s)	4.0		1.0	4.0	1.5	
Lane Grp Cap (vph)	2706		139	3570	178	
v/s Ratio Prot	0.19		c0.04	c0.27	c0.03	
v/s Ratio Perm						
v/c Ratio	0.35		0.55	0.39	0.28	
Uniform Delay, d1	6.2		20.9	2.9	19.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		2.7	0.1	0.3	
Delay (s)	6.3		23.6	3.0	19.6	
Level of Service	A		C	A	B	
Approach Delay (s)	6.3			4.0	19.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	1001	60	44	528	32	90	468	114	83	220	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5042		1770	5042		1770	3435		1770	3365	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5042		1770	5042		1770	3435		1770	3365	
Peak-hour factor, PHF	0.84	0.84	0.84	0.82	0.82	0.82	0.82	0.82	0.82	0.67	0.67	0.67
Adj. Flow (vph)	130	1192	71	54	644	39	110	571	139	124	328	160
RTOR Reduction (vph)	0	5	0	0	6	0	0	25	0	0	70	0
Lane Group Flow (vph)	130	1258	0	54	677	0	110	685	0	124	418	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.6	26.2		4.5	17.1		12.1	21.5		7.4	16.8	
Effective Green, g (s)	13.6	26.2		4.5	17.1		12.1	21.5		7.4	16.8	
Actuated g/C Ratio	0.18	0.34		0.06	0.22		0.16	0.28		0.10	0.22	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	311	1707		103	1114		277	954		169	730	
v/s Ratio Prot	0.07	c0.25		0.03	c0.13		0.06	c0.20		c0.07	0.12	
v/s Ratio Perm												
v/c Ratio	0.42	0.74		0.52	0.61		0.40	0.72		0.73	0.57	
Uniform Delay, d1	28.4	22.6		35.4	27.1		29.4	25.2		34.0	27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.5		2.2	0.6		0.3	2.2		13.2	0.7	
Delay (s)	28.7	24.0		37.6	27.8		29.7	27.4		47.3	27.8	
Level of Service	C	C		D	C		C	C		D	C	
Approach Delay (s)		24.5			28.5			27.7			31.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	18.7
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	932	81	143	1047	69	77	491	114	88	578	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5024		1770	5038		1770	3439		1770	3453	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5024		1770	5038		1770	3439		1770	3453	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.90	0.90	0.90	0.98	0.98	0.98
Adj. Flow (vph)	166	1002	87	155	1138	75	86	546	127	90	590	114
RTOR Reduction (vph)	0	9	0	0	7	0	0	23	0	0	18	0
Lane Group Flow (vph)	166	1080	0	155	1206	0	86	650	0	90	686	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.3	22.4		10.5	21.6		9.1	23.7		7.0	21.6	
Effective Green, g (s)	11.3	22.4		10.5	21.6		9.1	23.7		7.0	21.6	
Actuated g/C Ratio	0.14	0.28		0.13	0.27		0.11	0.29		0.09	0.27	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	246	1383		228	1337		198	1001		152	916	
v/s Ratio Prot	0.09	c0.21		0.09	c0.24		0.05	c0.19		0.05	c0.20	
v/s Ratio Perm												
v/c Ratio	0.67	0.78		0.68	0.90		0.43	0.65		0.59	0.75	
Uniform Delay, d1	33.3	27.2		33.8	28.9		33.7	25.2		35.8	27.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	2.7		6.2	8.5		0.6	1.1		4.1	3.0	
Delay (s)	38.9	29.9		40.0	37.4		34.3	26.3		39.9	30.4	
Level of Service	D	C		D	D		C	C		D	C	
Approach Delay (s)		31.1			37.7			27.2			31.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	9.8
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	354	773	45	63	425	60	79	490	149	77	194	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95		0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3510		3433	4991		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3510		3433	4991		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.75	0.75	0.75	0.94	0.94	0.94	0.66	0.66	0.66	0.92	0.92	0.92
Adj. Flow (vph)	472	1031	60	67	452	64	120	742	226	84	211	79
RTOR Reduction (vph)	0	2	0	0	15	0	0	0	66	0	0	71
Lane Group Flow (vph)	472	1089	0	67	501	0	120	742	160	84	211	8
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)	34.7	45.8		4.5	15.6		24.8	28.6	28.6	7.2	11.0	11.0
Effective Green, g (s)	34.7	45.8		4.5	15.6		24.8	28.6	28.6	7.2	11.0	11.0
Actuated g/C Ratio	0.33	0.44		0.04	0.15		0.24	0.28	0.28	0.07	0.11	0.11
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	1150	1552		149	752		424	977	437	123	376	168
v/s Ratio Prot	0.14	c0.31		0.02	c0.10		0.07	c0.21		c0.05	0.06	
v/s Ratio Perm									0.10			0.01
v/c Ratio	0.41	0.70		0.45	0.67		0.28	0.76	0.37	0.68	0.56	0.05
Uniform Delay, d1	26.6	23.4		48.3	41.5		32.1	34.3	30.2	47.1	44.0	41.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.2		0.8	1.7		0.1	3.1	0.2	11.8	1.1	0.0
Delay (s)	26.7	24.6		49.1	43.3		32.3	37.4	30.4	58.8	45.2	41.6
Level of Service	C	C		D	D		C	D	C	E	D	D
Approach Delay (s)		25.2			43.9			35.4			47.5	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	33.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	749	77	211	1031	92	74	449	136	67	386	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95		0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3489		3433	5023		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3489		3433	5023		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.73	0.73	0.73	0.82	0.82	0.82	0.80	0.80	0.80
Adj. Flow (vph)	325	861	89	289	1412	126	90	548	166	84	482	129
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	70	0	0	105
Lane Group Flow (vph)	325	946	0	289	1532	0	90	548	96	84	482	24
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases									4			8
Actuated Green, G (s)	14.2	46.0		13.1	44.9		11.9	24.5	24.5	7.7	20.3	20.3
Effective Green, g (s)	14.2	46.0		13.1	44.9		11.9	24.5	24.5	7.7	20.3	20.3
Actuated g/C Ratio	0.13	0.42		0.12	0.41		0.11	0.23	0.23	0.07	0.19	0.19
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	448	1475		413	2073		194	797	356	125	660	295
v/s Ratio Prot	0.09	c0.27		0.08	c0.31		c0.05	c0.15		c0.05	0.14	
v/s Ratio Perm									0.06			0.02
v/c Ratio	0.73	0.64		0.70	0.74		0.46	0.69	0.27	0.67	0.73	0.08
Uniform Delay, d1	45.4	24.9		46.0	27.0		45.5	38.6	34.8	49.3	41.7	36.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	0.7		4.2	1.2		0.6	2.0	0.1	10.6	3.6	0.0
Delay (s)	50.3	25.6		50.1	28.2		46.1	40.6	34.9	59.9	45.3	36.6
Level of Service	D	C		D	C		D	D	C	E	D	D
Approach Delay (s)		31.9			31.7			40.1			45.4	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	17.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	807	5	17	532	11	4	2	1	6	6	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	0.95
Frt	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.94	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5081		1770	5070		1770	1783		1770	1658	1504
Flt Permitted	0.95	1.00		0.95	1.00		1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1770	5081		1770	5070		1863	1783		1863	1658	1504
Peak-hour factor, PHF	0.72	0.72	0.72	0.92	0.92	0.92	0.44	0.44	0.44	0.54	0.54	0.54
Adj. Flow (vph)	49	1121	7	18	578	12	9	5	2	11	11	26
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	8	17
Lane Group Flow (vph)	49	1128	0	18	588	0	9	5	0	11	11	1
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	1.6	15.4		0.6	14.4		1.4	1.4		1.4	1.4	1.4
Effective Green, g (s)	1.6	15.4		0.6	14.4		1.4	1.4		1.4	1.4	1.4
Actuated g/C Ratio	0.05	0.51		0.02	0.48		0.05	0.05		0.05	0.05	0.05
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	93	2582		35	2410		86	82		86	77	69
v/s Ratio Prot	c0.03	c0.22		0.01	0.12			0.00			c0.01	
v/s Ratio Perm							0.00			0.01		0.00
v/c Ratio	0.53	0.44		0.51	0.24		0.10	0.06		0.13	0.15	0.01
Uniform Delay, d1	14.0	4.7		14.7	4.7		13.8	13.8		13.9	13.9	13.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.5	0.0		5.2	0.0		0.2	0.1		0.2	0.3	0.0
Delay (s)	16.5	4.8		19.9	4.7		14.0	13.9		14.1	14.2	13.8
Level of Service	B	A		B	A		B	B		B	B	B
Approach Delay (s)		5.2			5.2			14.0			14.0	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	30.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	863	10	12	997	13	1	34	11	7	24	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	0.95
Frt	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.99	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5077		1770	5075		1770	1795		1770	1747	1504
Flt Permitted	0.95	1.00		0.95	1.00		1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1770	5077		1770	5075		1863	1795		1863	1747	1504
Peak-hour factor, PHF	0.88	0.88	0.88	0.89	0.89	0.89	0.82	0.82	0.82	0.56	0.56	0.56
Adj. Flow (vph)	58	981	11	13	1120	15	1	41	13	12	43	41
RTOR Reduction (vph)	0	1	0	0	1	0	0	12	0	0	4	34
Lane Group Flow (vph)	58	991	0	13	1134	0	1	42	0	12	43	3
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	2.8	21.7		0.6	19.5		2.8	2.8		2.8	2.8	2.8
Effective Green, g (s)	2.8	21.7		0.6	19.5		2.8	2.8		2.8	2.8	2.8
Actuated g/C Ratio	0.07	0.57		0.02	0.51		0.07	0.07		0.07	0.07	0.07
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	130	2899		28	2604		137	132		137	129	111
v/s Ratio Prot	c0.03	0.20		0.01	c0.22			0.02			c0.02	
v/s Ratio Perm							0.00			0.01		0.00
v/c Ratio	0.45	0.34		0.46	0.44		0.01	0.32		0.09	0.34	0.02
Uniform Delay, d1	16.9	4.3		18.5	5.8		16.3	16.7		16.4	16.7	16.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	0.0		4.4	0.0		0.0	0.5		0.1	0.6	0.0
Delay (s)	17.7	4.4		22.9	5.8		16.3	17.2		16.5	17.3	16.4
Level of Service	B	A		C	A		B	B		B	B	B
Approach Delay (s)		5.1			6.0			17.2			16.8	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	608	25	37	480	41	31	147	47	20	90	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	4.6		4.0	4.6	4.6
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5055		1770	5025		1770	1795		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5055		1770	5025		1770	1795		1770	1863	1583
Peak-hour factor, PHF	0.71	0.71	0.71	0.87	0.87	0.87	0.84	0.84	0.84	0.72	0.72	0.72
Adj. Flow (vph)	248	856	35	43	552	47	37	175	56	28	125	76
RTOR Reduction (vph)	0	2	0	0	6	0	0	8	0	0	0	59
Lane Group Flow (vph)	248	889	0	43	593	0	37	223	0	28	125	17
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	9.0	22.2		3.3	16.5		3.1	14.1		1.9	12.9	12.9
Effective Green, g (s)	9.0	22.2		3.3	16.5		3.1	14.1		1.9	12.9	12.9
Actuated g/C Ratio	0.15	0.38		0.06	0.28		0.05	0.24		0.03	0.22	0.22
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	4.6		4.0	4.6	4.6
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	523	1899		99	1403		93	428		57	407	346
v/s Ratio Prot	c0.07	c0.18		0.02	0.12		c0.02	c0.12		0.02	0.07	
v/s Ratio Perm												0.01
v/c Ratio	0.47	0.47		0.43	0.42		0.40	0.52		0.49	0.31	0.05
Uniform Delay, d1	22.9	14.0		27.0	17.4		27.1	19.6		28.1	19.4	18.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		1.1	0.1		1.0	0.5		2.4	0.2	0.0
Delay (s)	23.1	14.0		28.1	17.5		28.1	20.1		30.5	19.5	18.3
Level of Service	C	B		C	B		C	C		C	B	B
Approach Delay (s)		16.0			18.2			21.2			20.4	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	599	28	54	814	84	27	168	36	40	150	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	4.6		4.0	4.6	4.6
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5051		1770	5014		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5051		1770	5014		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.88	0.88	0.88	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	276	697	33	61	925	95	31	191	41	43	161	210
RTOR Reduction (vph)	0	3	0	0	8	0	0	5	0	0	0	164
Lane Group Flow (vph)	276	727	0	61	1012	0	31	227	0	43	161	46
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	11.0	30.1		5.6	24.7		3.1	15.6		3.5	16.0	16.0
Effective Green, g (s)	11.0	30.1		5.6	24.7		3.1	15.6		3.5	16.0	16.0
Actuated g/C Ratio	0.15	0.42		0.08	0.34		0.04	0.22		0.05	0.22	0.22
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	4.6		4.0	4.6	4.6
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	522	2100		137	1711		76	391		86	412	350
v/s Ratio Prot	c0.08	0.14		0.03	c0.20		0.02	c0.12		c0.02	0.09	
v/s Ratio Perm												0.03
v/c Ratio	0.53	0.35		0.45	0.59		0.41	0.58		0.50	0.39	0.13
Uniform Delay, d1	28.3	14.4		31.9	19.7		33.8	25.5		33.6	24.0	22.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0		0.8	0.4		1.3	1.3		1.7	0.2	0.1
Delay (s)	28.8	14.5		32.8	20.1		35.1	26.8		35.3	24.3	22.7
Level of Service	C	B		C	C		D	C		D	C	C
Approach Delay (s)		18.4			20.8			27.7			24.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	72.4	Sum of lost time (s)	17.6
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	284	113	160	288	145	162	1187	143	161	702	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4868		3433	4830		1770	5003		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	4868		3433	4830		1770	5003		1770	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.80	0.80	0.80	0.76	0.76	0.76
Adj. Flow (vph)	241	351	140	178	320	161	202	1484	179	212	924	253
RTOR Reduction (vph)	0	55	0	0	71	0	0	10	0	0	0	120
Lane Group Flow (vph)	241	436	0	178	410	0	202	1653	0	212	924	133
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	11.7	19.8		9.8	17.9		16.0	36.1		16.6	36.7	36.7
Effective Green, g (s)	11.7	19.8		9.8	17.9		16.0	36.1		16.6	36.7	36.7
Actuated g/C Ratio	0.12	0.20		0.10	0.18		0.16	0.36		0.17	0.37	0.37
Clearance Time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Vehicle Extension (s)	2.0	5.2		2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	402	964		336	865		283	1806		294	1866	581
v/s Ratio Prot	c0.07	c0.09		0.05	0.08		0.11	c0.33		c0.12	0.18	
v/s Ratio Perm												0.08
v/c Ratio	0.60	0.45		0.53	0.47		0.71	0.92		0.72	0.50	0.23
Uniform Delay, d1	41.9	35.3		42.9	36.8		39.8	30.5		39.5	24.5	21.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.8		0.7	0.9		6.9	8.2		7.2	0.5	0.5
Delay (s)	43.5	36.1		43.6	37.7		46.8	38.7		46.7	24.9	22.3
Level of Service	D	D		D	D		D	D		D	C	C
Approach Delay (s)		38.5			39.3			39.5			27.8	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.3
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	352	227	311	421	136	144	908	115	188	1155	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.94		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4787		3433	4899		1770	5000		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	4787		3433	4899		1770	5000		1770	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.91	0.91	0.91	0.79	0.79	0.79
Adj. Flow (vph)	295	435	280	362	490	158	158	998	126	238	1462	386
RTOR Reduction (vph)	0	86	0	0	42	0	0	11	0	0	0	120
Lane Group Flow (vph)	295	629	0	362	606	0	158	1113	0	238	1462	266
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	14.6	25.9		16.8	28.1		15.0	35.0		20.0	40.0	40.0
Effective Green, g (s)	14.6	25.9		16.8	28.1		15.0	35.0		20.0	40.0	40.0
Actuated g/C Ratio	0.13	0.22		0.15	0.24		0.13	0.30		0.17	0.35	0.35
Clearance Time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Vehicle Extension (s)	2.0	5.2		2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	434	1074		500	1193		230	1516		307	1763	549
v/s Ratio Prot	0.09	c0.13		c0.11	0.12		0.09	c0.22		0.13	c0.29	
v/s Ratio Perm												0.17
v/c Ratio	0.68	0.59		0.72	0.51		0.69	0.73		0.78	0.83	0.49
Uniform Delay, d1	48.2	40.0		47.1	37.7		48.0	36.0		45.6	34.6	29.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.3	1.3		4.4	0.8		6.6	2.3		10.6	3.8	1.5
Delay (s)	51.5	41.3		51.5	38.4		54.6	38.4		56.2	38.4	31.1
Level of Service	D	D		D	D		D	D		E	D	C
Approach Delay (s)		44.3			43.1			40.4			39.1	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	115.4	Sum of lost time (s)	18.4
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	338	39	68	468	9	105	38	61	24	18	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.6	4.9			4.6	4.6		4.6	4.6
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	5007		1770	5071			1797	1583		1811	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	5007		1770	5071			1797	1583		1811	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.87	0.87	0.87	0.82	0.82	0.82	0.74	0.74	0.74
Adj. Flow (vph)	38	402	46	78	538	10	128	46	74	32	24	39
RTOR Reduction (vph)	0	10	0	0	1	0	0	0	60	0	0	35
Lane Group Flow (vph)	38	438	0	78	547	0	0	174	14	0	56	4
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases									4			3
Actuated Green, G (s)	2.0	13.4		5.0	17.0			10.1	10.1		4.7	4.7
Effective Green, g (s)	2.0	13.4		5.0	17.0			10.1	10.1		4.7	4.7
Actuated g/C Ratio	0.04	0.26		0.10	0.33			0.19	0.19		0.09	0.09
Clearance Time (s)	4.0	4.9		4.6	4.9			4.6	4.6		4.6	4.6
Vehicle Extension (s)	1.0	2.0		1.0	2.0			1.5	1.5		1.5	1.5
Lane Grp Cap (vph)	68	1293		171	1661			350	308		164	143
v/s Ratio Prot	0.02	0.09		c0.04	c0.11			c0.10			c0.03	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.56	0.34		0.46	0.33			0.50	0.05		0.34	0.02
Uniform Delay, d1	24.5	15.6		22.2	13.2			18.6	17.0		22.1	21.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	5.5	0.1		0.7	0.0			0.4	0.0		0.5	0.0
Delay (s)	30.1	15.7		22.9	13.2			19.0	17.0		22.6	21.5
Level of Service	C	B		C	B			B	B		C	C
Approach Delay (s)		16.8			14.4			18.4			22.2	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	18.7
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	565	40	55	493	6	69	13	74	5	3	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.6	4.9			4.6	4.6		4.6	4.6
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	5035		1770	5077			1788	1583		1808	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	5035		1770	5077			1788	1583		1808	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.95	0.95	0.95	0.81	0.81	0.81	0.80	0.80	0.80
Adj. Flow (vph)	42	743	53	58	519	6	85	16	91	6	4	30
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	79	0	0	29
Lane Group Flow (vph)	42	791	0	58	524	0	0	101	12	0	10	1
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases									4			3
Actuated Green, G (s)	2.7	16.9		3.0	17.8			6.0	6.0		2.2	2.2
Effective Green, g (s)	2.7	16.9		3.0	17.8			6.0	6.0		2.2	2.2
Actuated g/C Ratio	0.06	0.36		0.06	0.38			0.13	0.13		0.05	0.05
Clearance Time (s)	4.0	4.9		4.6	4.9			4.6	4.6		4.6	4.6
Vehicle Extension (s)	1.0	2.0		1.0	2.0			1.5	1.5		1.5	1.5
Lane Grp Cap (vph)	102	1818		113	1931			229	203		85	74
v/s Ratio Prot	0.02	c0.16		c0.03	0.10			c0.06			c0.01	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.41	0.44		0.51	0.27			0.44	0.06		0.12	0.02
Uniform Delay, d1	21.3	11.3		21.2	10.0			18.9	17.9		21.4	21.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1		1.6	0.0			0.5	0.0		0.2	0.0
Delay (s)	22.3	11.4		22.8	10.0			19.3	18.0		21.6	21.3
Level of Service	C	B		C	B			B	B		C	C
Approach Delay (s)		11.9			11.3			18.7			21.4	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	18.7
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	289	30	12	463	0	31	26	2	3	41	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			1.00	1.00
Satd. Flow (prot)	1770	5014		1770	5085			1807			1857	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97			1.00	1.00
Satd. Flow (perm)	1770	5014		1770	5085			1807			1857	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.91	0.91	0.91	0.64	0.64	0.64	0.58	0.58	0.58
Adj. Flow (vph)	9	332	34	13	509	0	48	41	3	5	71	12
RTOR Reduction (vph)	0	13	0	0	0	0	0	2	0	0	0	11
Lane Group Flow (vph)	9	353	0	13	509	0	0	90	0	0	76	1
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	0.5	12.8		0.7	13.0			3.1			3.1	3.1
Effective Green, g (s)	0.5	12.8		0.7	13.0			3.1			3.1	3.1
Actuated g/C Ratio	0.01	0.35		0.02	0.35			0.08			0.08	0.08
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	4.0
Vehicle Extension (s)	1.5	2.0		1.0	2.0			1.0			1.5	1.5
Lane Grp Cap (vph)	24	1749		34	1801			153			157	134
v/s Ratio Prot	0.01	0.07		c0.01	c0.10			c0.05			c0.04	
v/s Ratio Perm												0.00
v/c Ratio	0.38	0.20		0.38	0.28			0.59			0.48	0.01
Uniform Delay, d1	17.9	8.4		17.8	8.5			16.2			16.0	15.4
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	3.6	0.0		2.6	0.0			3.7			0.9	0.0
Delay (s)	21.5	8.4		20.4	8.5			19.9			16.9	15.4
Level of Service	C	A		C	A			B			B	B
Approach Delay (s)		8.7			8.8			19.9			16.7	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	499	90	25	423	9	69	29	30	6	28	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0			4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	1.00
Satd. Flow (prot)	1770	4969		1770	5069			1756			1846	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.99	1.00
Satd. Flow (perm)	1770	4969		1770	5069			1756			1846	1583
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.67	0.67	0.67	0.79	0.79	0.79
Adj. Flow (vph)	35	640	115	27	460	10	103	43	45	8	35	53
RTOR Reduction (vph)	0	28	0	0	3	0	0	12	0	0	0	49
Lane Group Flow (vph)	35	727	0	27	467	0	0	179	0	0	43	4
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	1.1	15.4		1.6	15.9			7.0			3.0	3.0
Effective Green, g (s)	1.1	15.4		1.6	15.9			7.0			3.0	3.0
Actuated g/C Ratio	0.03	0.35		0.04	0.36			0.16			0.07	0.07
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0			4.0	4.0
Vehicle Extension (s)	1.5	2.0		1.0	2.0			1.0			1.5	1.5
Lane Grp Cap (vph)	44	1739		64	1832			279			126	108
v/s Ratio Prot	c0.02	c0.15		0.02	0.09			c0.10			c0.02	
v/s Ratio Perm												0.00
v/c Ratio	0.80	0.42		0.42	0.26			0.64			0.34	0.03
Uniform Delay, d1	21.3	10.9		20.7	9.9			17.3			19.6	19.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	59.8	0.1		1.6	0.0			3.8			0.6	0.0
Delay (s)	81.1	10.9		22.4	9.9			21.1			20.1	19.2
Level of Service	F	B		C	A			C			C	B
Approach Delay (s)		14.1			10.6			21.1			19.6	
Approach LOS		B			B			C			B	

Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	263	61	33	280	7	67	65	67	9	45	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4941		1770	5067		1770	1863	1583	1770	1794	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	1770	4941		1770	5067		1326	1863	1583	1314	1794	
Peak-hour factor, PHF	0.96	0.96	0.96	0.77	0.77	0.77	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	23	274	64	43	364	9	82	79	82	10	52	17
RTOR Reduction (vph)	0	33	0	0	2	0	0	0	67	0	11	0
Lane Group Flow (vph)	23	305	0	43	371	0	82	79	15	10	58	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	0.7	11.0		0.8	11.1		5.9	5.9	5.9	5.9	5.9	
Effective Green, g (s)	0.7	11.0		0.8	11.1		5.9	5.9	5.9	5.9	5.9	
Actuated g/C Ratio	0.02	0.35		0.03	0.35		0.19	0.19	0.19	0.19	0.19	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	40	1736		45	1797		250	351	298	248	338	
v/s Ratio Prot	0.01	0.06		c0.02	c0.07			0.04			0.03	
v/s Ratio Perm							c0.06		0.01	0.01		
v/c Ratio	0.57	0.18		0.96	0.21		0.33	0.23	0.05	0.04	0.17	
Uniform Delay, d1	15.2	7.0		15.2	7.0		11.0	10.8	10.4	10.4	10.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.8	0.0		115.5	0.0		0.3	0.1	0.0	0.0	0.1	
Delay (s)	27.0	7.0		130.7	7.1		11.3	10.9	10.4	10.4	10.7	
Level of Service	C	A		F	A		B	B	B	B	B	
Approach Delay (s)		8.3			19.8			10.9			10.7	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	31.3	Sum of lost time (s)	8.6
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	420	55	56	425	17	70	84	71	7	59	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4997		1770	5055		1770	1863	1583	1770	1816	
Flt Permitted	0.95	1.00		0.95	1.00		0.70	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	1770	4997		1770	5055		1295	1863	1583	1300	1816	
Peak-hour factor, PHF	0.96	0.96	0.96	0.64	0.64	0.64	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	16	438	57	88	664	27	76	91	77	9	79	16
RTOR Reduction (vph)	0	14	0	0	3	0	0	0	64	0	7	0
Lane Group Flow (vph)	16	481	0	88	688	0	76	91	13	9	88	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	0.7	13.1		3.2	15.6		6.0	6.0	6.0	6.0	6.0	
Effective Green, g (s)	0.7	13.1		3.2	15.6		6.0	6.0	6.0	6.0	6.0	
Actuated g/C Ratio	0.02	0.36		0.09	0.43		0.17	0.17	0.17	0.17	0.17	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	35	1823		158	2197		216	311	265	217	304	
v/s Ratio Prot	0.01	0.10		c0.05	c0.14			0.05			0.05	
v/s Ratio Perm							c0.06		0.01	0.01		
v/c Ratio	0.46	0.26		0.56	0.31		0.35	0.29	0.05	0.04	0.29	
Uniform Delay, d1	17.4	8.0		15.7	6.6		13.2	13.1	12.6	12.5	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.0		2.4	0.0		0.4	0.2	0.0	0.0	0.2	
Delay (s)	20.8	8.0		18.1	6.7		13.6	13.3	12.6	12.6	13.3	
Level of Service	C	A		B	A		B	B	B	B	B	
Approach Delay (s)		8.4			8.0			13.2			13.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	35.9	Sum of lost time (s)	8.6
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	68	57	40	80	79	97	683	29	72	593	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.3		4.0	6.3	
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.95		0.97	0.95	
Frt	1.00	0.93		1.00	0.93		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3298		3433	3275		3433	3518		3891	3388	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3298		3433	3275		3433	3518		3891	3388	
Peak-hour factor, PHF	0.86	0.86	0.86	0.95	0.95	0.95	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	208	79	66	42	84	83	111	785	33	77	638	255
RTOR Reduction (vph)	0	50	0	0	69	0	0	2	0	0	29	0
Lane Group Flow (vph)	208	95	0	42	98	0	111	816	0	77	864	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.6	16.9		3.5	11.8		5.5	24.9		4.7	24.1	
Effective Green, g (s)	8.6	16.9		3.5	11.8		5.5	24.9		4.7	24.1	
Actuated g/C Ratio	0.12	0.24		0.05	0.17		0.08	0.35		0.07	0.34	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	420	793		171	550		269	1246		260	1161	
v/s Ratio Prot	c0.06	0.03		0.01	c0.03		c0.03	0.23		0.02	c0.26	
v/s Ratio Perm												
v/c Ratio	0.50	0.12		0.25	0.18		0.41	0.65		0.30	0.74	
Uniform Delay, d1	28.8	20.9		32.1	25.1		30.9	19.1		31.2	20.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0		0.3	0.1		0.4	1.0		0.2	2.3	
Delay (s)	29.2	20.9		32.4	25.1		31.2	20.0		31.5	22.7	
Level of Service	C	C		C	C		C	C		C	C	
Approach Delay (s)		25.8			26.6			21.4			23.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	20.3
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	146	134	51	79	87	132	732	31	116	754	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.3		4.0	6.3	
Lane Util. Factor	0.97	0.95		0.97	0.95		0.97	0.95		0.97	0.95	
Frt	1.00	0.93		1.00	0.92		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3285		3433	3261		3433	3518		3891	3373	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3285		3433	3261		3433	3518		3891	3373	
Peak-hour factor, PHF	0.85	0.85	0.85	0.82	0.82	0.82	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	424	172	158	62	96	106	148	822	35	126	820	373
RTOR Reduction (vph)	0	118	0	0	91	0	0	2	0	0	38	0
Lane Group Flow (vph)	424	212	0	62	111	0	148	855	0	126	1155	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.7	19.5		5.1	10.9		7.8	24.8		7.0	24.0	
Effective Green, g (s)	13.7	19.5		5.1	10.9		7.8	24.8		7.0	24.0	
Actuated g/C Ratio	0.18	0.25		0.07	0.14		0.10	0.32		0.09	0.31	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.3		4.0	6.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	613	835		228	463		349	1138		355	1055	
v/s Ratio Prot	c0.12	c0.06		0.02	0.03		c0.04	0.24		0.03	c0.34	
v/s Ratio Perm												
v/c Ratio	0.69	0.25		0.27	0.24		0.42	0.75		0.35	1.09	
Uniform Delay, d1	29.5	22.8		34.0	29.2		32.3	23.2		32.7	26.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	0.1		0.2	0.1		0.3	2.5		0.2	57.4	
Delay (s)	32.2	22.9		34.3	29.3		32.6	25.7		33.0	83.7	
Level of Service	C	C		C	C		C	C		C	F	
Approach Delay (s)		28.1			30.5			26.7			78.9	
Approach LOS		C			C			C			E	

Intersection Summary

HCM Average Control Delay	47.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	14.3
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1	1	2	357	177	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.6	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.25	0.25	0.72	0.72	0.74	0.74
Adj. Flow (vph)	4	4	3	496	239	5
RTOR Reduction (vph)	0	4	0	0	0	3
Lane Group Flow (vph)	4	0	3	496	239	2
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	0.5	0.5	0.5	15.4	10.9	10.9
Effective Green, g (s)	0.5	0.5	0.5	15.4	10.9	10.9
Actuated g/C Ratio	0.02	0.02	0.02	0.63	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0	4.6	4.6	4.6
Vehicle Extension (s)	1.0	1.0	1.0	2.0	2.0	2.0
Lane Grp Cap (vph)	36	32	36	2225	1574	704
v/s Ratio Prot	c0.00		0.00	c0.14	0.07	
v/s Ratio Perm		0.00				0.00
v/c Ratio	0.11	0.00	0.08	0.22	0.15	0.00
Uniform Delay, d1	11.8	11.8	11.8	2.0	4.0	3.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	0.4	0.0	0.0	0.0
Delay (s)	12.3	11.8	12.1	2.0	4.1	3.8
Level of Service	B	B	B	A	A	A
Approach Delay (s)	12.0			2.0	4.1	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	2.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	24.5	Sum of lost time (s)	8.6
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	9	18	455	395	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.6	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.60	0.60	0.86	0.86	0.81	0.81
Adj. Flow (vph)	33	15	21	529	488	28
RTOR Reduction (vph)	0	14	0	0	0	9
Lane Group Flow (vph)	33	1	21	529	488	19
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	1.4	1.4	0.6	16.1	11.5	11.5
Effective Green, g (s)	1.4	1.4	0.6	16.1	11.5	11.5
Actuated g/C Ratio	0.05	0.05	0.02	0.62	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0	4.6	4.6	4.6
Vehicle Extension (s)	1.0	1.0	1.0	2.0	2.0	2.0
Lane Grp Cap (vph)	95	85	41	2183	1559	697
v/s Ratio Prot	c0.02		0.01	c0.15	c0.14	
v/s Ratio Perm		0.00				0.01
v/c Ratio	0.35	0.01	0.51	0.24	0.31	0.03
Uniform Delay, d1	11.9	11.7	12.6	2.3	4.7	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.0	4.4	0.0	0.0	0.0
Delay (s)	12.7	11.7	17.0	2.3	4.8	4.1
Level of Service	B	B	B	A	A	A
Approach Delay (s)	12.4			2.8	4.7	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	4.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	26.1	Sum of lost time (s)	13.2
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	0	12	133	0	18	96	1320	104	154	896	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1794		1681	1905	1583	1770	5030		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1794		1681	1905	1583	1770	5030		1770	5085	1583
Peak-hour factor, PHF	0.25	0.25	0.25	0.67	0.67	0.67	0.76	0.76	0.76	0.73	0.73	0.73
Adj. Flow (vph)	232	0	48	199	0	27	126	1737	137	211	1227	190
RTOR Reduction (vph)	0	39	0	0	0	23	0	7	0	0	0	57
Lane Group Flow (vph)	232	9	0	99	100	4	126	1867	0	211	1227	133
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	18.5	18.5		13.6	13.6	13.6	11.2	30.5		15.3	34.6	34.6
Effective Green, g (s)	18.5	18.5		13.6	13.6	13.6	11.2	30.5		15.3	34.6	34.6
Actuated g/C Ratio	0.20	0.20		0.14	0.14	0.14	0.12	0.32		0.16	0.37	0.37
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	347	352		242	274	228	210	1625		287	1864	580
v/s Ratio Prot	c0.13	0.01		c0.06	0.05		0.07	c0.37		c0.12	0.24	
v/s Ratio Perm						0.00						0.08
v/c Ratio	0.67	0.03		0.41	0.36	0.02	0.60	1.15		0.74	0.66	0.23
Uniform Delay, d1	35.1	30.7		36.7	36.5	34.7	39.5	32.0		37.6	25.0	20.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.9	0.1		2.8	2.0	0.1	3.1	74.6		8.1	1.2	0.5
Delay (s)	42.0	30.7		39.5	38.5	34.7	42.5	106.5		45.8	26.2	21.1
Level of Service	D	C		D	D	C	D	F		D	C	C
Approach Delay (s)		40.1			38.5			102.5			28.1	
Approach LOS		D			D			F			C	

Intersection Summary

HCM Average Control Delay	65.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	7	53	225	7	104	80	1209	10	35	1357	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.87		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1832		1681	1916	1583	1770	5079		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1832		1681	1916	1583	1770	5079		1770	5085	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.81	0.81	0.81	0.97	0.97	0.97	0.83	0.83	0.83
Adj. Flow (vph)	195	9	67	278	9	128	82	1246	10	42	1635	81
RTOR Reduction (vph)	0	54	0	0	0	104	0	1	0	0	0	19
Lane Group Flow (vph)	195	22	0	145	142	24	82	1255	0	42	1635	62
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.0	17.0		16.8	16.8	16.8	7.3	34.8		4.3	31.8	31.8
Effective Green, g (s)	17.0	17.0		16.8	16.8	16.8	7.3	34.8		4.3	31.8	31.8
Actuated g/C Ratio	0.19	0.19		0.19	0.19	0.19	0.08	0.39		0.05	0.36	0.36
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	337	348		316	360	297	145	1977		85	1809	563
v/s Ratio Prot	c0.11	0.01		c0.09	0.07		c0.05	c0.25		0.02	c0.32	
v/s Ratio Perm						0.02						0.04
v/c Ratio	0.58	0.06		0.46	0.39	0.08	0.57	0.63		0.49	0.90	0.11
Uniform Delay, d1	32.9	29.7		32.3	31.8	29.9	39.5	22.1		41.5	27.3	19.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.3	0.2		2.6	1.7	0.3	3.0	1.0		1.6	7.3	0.2
Delay (s)	37.2	29.9		34.8	33.6	30.2	42.5	23.1		43.1	34.6	19.5
Level of Service	D	C		C	C	C	D	C		D	C	B
Approach Delay (s)		35.2			33.0			24.3			34.1	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	21.4
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1087	1042	135	133	395	47	401	624	420	107	263	414
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9	4.9	4.0	5.3	5.3	4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.77	0.70	0.70	0.70	0.65	0.65	0.65	0.73	0.73	0.73
Adj. Flow (vph)	1412	1353	175	190	564	67	617	960	646	147	360	567
RTOR Reduction (vph)	0	0	48	0	0	54	0	0	170	0	0	267
Lane Group Flow (vph)	1412	1353	127	190	564	13	617	960	476	147	360	300
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	34.2	49.2	49.2	9.5	24.5	24.5	16.0	34.8	34.8	10.7	29.5	29.5
Effective Green, g (s)	34.2	49.2	49.2	9.5	24.5	24.5	16.0	34.8	34.8	10.7	29.5	29.5
Actuated g/C Ratio	0.28	0.40	0.40	0.08	0.20	0.20	0.13	0.28	0.28	0.09	0.24	0.24
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9	4.9	4.0	5.3	5.3	4.0	5.3	5.3
Vehicle Extension (s)	0.5	2.0	2.0	0.5	2.0	2.0	0.5	2.0	2.0	0.5	2.0	2.0
Lane Grp Cap (vph)	959	1423	636	266	708	317	449	1006	450	300	853	382
v/s Ratio Prot	c0.41	c0.38		0.06	0.16		c0.18	0.27		0.04	0.10	
v/s Ratio Perm			0.08			0.01			c0.30			c0.19
v/c Ratio	1.47	0.95	0.20	0.71	0.80	0.04	1.37	0.95	1.06	0.49	0.42	0.78
Uniform Delay, d1	44.1	35.4	23.8	55.1	46.6	39.5	53.2	43.0	43.8	53.2	39.2	43.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	218.3	13.7	0.1	7.4	5.8	0.0	182.0	18.1	58.8	0.5	0.1	9.4
Delay (s)	262.4	49.2	23.8	62.5	52.4	39.5	235.2	61.1	102.6	53.7	39.4	52.9
Level of Service	F	D	C	E	D	D	F	E	F	D	D	D
Approach Delay (s)		150.0			53.7			121.5			48.5	
Approach LOS		F			D			F			D	

Intersection Summary

HCM Average Control Delay	114.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	122.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	689	670	331	447	1047	80	283	603	224	51	706	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9	4.9	4.0	5.3	5.3	4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.88	0.88	0.88	0.87	0.87	0.87
Adj. Flow (vph)	766	744	368	486	1138	87	322	685	255	59	811	626
RTOR Reduction (vph)	0	0	226	0	0	47	0	0	187	0	0	228
Lane Group Flow (vph)	766	744	142	486	1138	40	322	685	68	59	811	398
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	26.1	34.4	34.4	26.8	35.1	35.1	14.0	34.3	34.3	14.0	34.3	34.3
Effective Green, g (s)	26.1	34.4	34.4	26.8	35.1	35.1	14.0	34.3	34.3	14.0	34.3	34.3
Actuated g/C Ratio	0.20	0.27	0.27	0.21	0.27	0.27	0.11	0.27	0.27	0.11	0.27	0.27
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9	4.9	4.0	5.3	5.3	4.0	5.3	5.3
Vehicle Extension (s)	0.5	2.0	2.0	0.5	2.0	2.0	0.5	2.0	2.0	0.5	2.0	2.0
Lane Grp Cap (vph)	702	953	426	720	973	435	376	951	425	376	951	425
v/s Ratio Prot	c0.22	0.21		0.14	c0.32		c0.09	0.19		0.02	0.23	
v/s Ratio Perm			0.09			0.03			0.04			c0.25
v/c Ratio	1.09	0.78	0.33	0.68	1.17	0.09	0.86	0.72	0.16	0.16	0.85	0.94
Uniform Delay, d1	50.8	43.2	37.5	46.4	46.3	34.4	55.9	42.3	35.7	51.5	44.3	45.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	61.5	3.9	0.2	2.0	87.4	0.0	16.6	2.3	0.1	0.1	7.2	27.6
Delay (s)	112.3	47.0	37.6	48.4	133.7	34.5	72.4	44.6	35.8	51.6	51.5	73.3
Level of Service	F	D	D	D	F	C	E	D	D	D	D	E
Approach Delay (s)		71.8			104.5			49.9			60.6	
Approach LOS		E			F			D			E	

Intersection Summary

HCM Average Control Delay	73.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	127.7	Sum of lost time (s)	18.2
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	1225	7	11	467	47	16	34	1	83	77	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3536		1770	3491		1770	1857		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3536		1770	3491		1770	1857		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.76	0.76	0.76	0.71	0.71	0.71	0.85	0.85	0.85
Adj. Flow (vph)	106	1361	8	14	614	62	23	48	1	98	91	76
RTOR Reduction (vph)	0	0	0	0	8	0	0	1	0	0	0	64
Lane Group Flow (vph)	106	1369	0	14	668	0	23	48	0	98	91	12
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	5.5	31.3		0.7	26.5		0.8	4.7		5.6	9.5	9.5
Effective Green, g (s)	5.5	31.3		0.7	26.5		0.8	4.7		5.6	9.5	9.5
Actuated g/C Ratio	0.09	0.54		0.01	0.45		0.01	0.08		0.10	0.16	0.16
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	166	1892		21	1581		24	149		169	303	257
v/s Ratio Prot	c0.06	c0.39		0.01	0.19		0.01	0.03		c0.06	c0.05	
v/s Ratio Perm												0.01
v/c Ratio	0.64	0.72		0.67	0.42		0.96	0.32		0.58	0.30	0.05
Uniform Delay, d1	25.5	10.3		28.8	10.8		28.8	25.4		25.3	21.6	20.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.8	1.2		47.8	0.1		162.4	0.5		3.0	0.2	0.0
Delay (s)	31.3	11.5		76.6	10.9		191.3	25.9		28.3	21.8	20.7
Level of Service	C	B		E	B		F	C		C	C	C
Approach Delay (s)		12.9			12.2			78.7			23.9	
Approach LOS		B			B			E			C	

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	673	18	37	977	62	79	94	10	182	64	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3525		1770	3507		1770	1835		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3525		1770	3507		1770	1835		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.80	0.80	0.80	0.74	0.74	0.74	0.81	0.81	0.81
Adj. Flow (vph)	108	748	20	46	1221	78	107	127	14	225	79	121
RTOR Reduction (vph)	0	2	0	0	5	0	0	4	0	0	0	96
Lane Group Flow (vph)	108	766	0	46	1294	0	107	137	0	225	79	25
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	6.7	36.7		3.7	33.7		6.6	11.5		11.4	16.3	16.3
Effective Green, g (s)	6.7	36.7		3.7	33.7		6.6	11.5		11.4	16.3	16.3
Actuated g/C Ratio	0.08	0.46		0.05	0.42		0.08	0.14		0.14	0.21	0.21
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lane Grp Cap (vph)	149	1627		82	1487		147	265		254	382	325
v/s Ratio Prot	c0.06	c0.22		0.03	c0.37		0.06	c0.07		c0.13	0.04	
v/s Ratio Perm												0.02
v/c Ratio	0.72	0.47		0.56	0.87		0.73	0.52		0.89	0.21	0.08
Uniform Delay, d1	35.5	14.7		37.1	20.9		35.6	31.4		33.4	26.2	25.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.7	0.1		5.1	5.7		14.1	0.7		27.9	0.1	0.0
Delay (s)	49.2	14.8		42.2	26.6		49.7	32.1		61.3	26.3	25.6
Level of Service	D	B		D	C		D	C		E	C	C
Approach Delay (s)		19.0			27.1			39.7			44.6	
Approach LOS		B			C			D			D	

Intersection Summary

HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	20.4
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	1116	106	67	387	22	112	414	94	19	202	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.2	3.5		3.2	3.5		3.2	4.4		3.2	4.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3493		1770	3510		1770	3441		1770	3487	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3493		1770	3510		1770	3441		1770	3487	
Peak-hour factor, PHF	0.91	0.91	0.91	0.77	0.77	0.77	0.80	0.80	0.80	0.71	0.71	0.71
Adj. Flow (vph)	104	1226	116	87	503	29	140	518	118	27	285	31
RTOR Reduction (vph)	0	4	0	0	2	0	0	13	0	0	6	0
Lane Group Flow (vph)	104	1338	0	87	530	0	140	623	0	27	310	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	47.7		6.9	45.6		11.0	24.4		4.3	17.7	
Effective Green, g (s)	9.0	47.7		6.9	45.6		11.0	24.4		4.3	17.7	
Actuated g/C Ratio	0.09	0.49		0.07	0.47		0.11	0.25		0.04	0.18	
Clearance Time (s)	3.2	3.5		3.2	3.5		3.2	4.4		3.2	4.4	
Vehicle Extension (s)	0.5	2.0		0.5	2.0		0.5	2.0		0.5	2.0	
Lane Grp Cap (vph)	163	1707		125	1640		199	860		78	632	
v/s Ratio Prot	c0.06	c0.38		0.05	0.15		c0.08	c0.18		0.02	0.09	
v/s Ratio Perm												
v/c Ratio	0.64	0.78		0.70	0.32		0.70	0.72		0.35	0.49	
Uniform Delay, d1	42.7	20.7		44.3	16.3		41.7	33.5		45.3	35.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	2.2		12.7	0.0		8.9	2.6		1.0	0.2	
Delay (s)	48.6	22.9		57.1	16.4		50.6	36.1		46.3	36.1	
Level of Service	D	C		E	B		D	D		D	D	
Approach Delay (s)		24.8			22.1			38.7			36.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	6.4
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	804	14	45	949	15	64	291	9	33	475	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.2	3.5		3.2	3.5		3.2	4.4		3.2	4.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1770	3531		1770	3524		1770	3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3530		1770	3531		1770	3524		1770	3488	
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.79	0.79	0.79	0.78	0.78	0.78
Adj. Flow (vph)	57	914	16	56	1172	19	81	368	11	42	609	65
RTOR Reduction (vph)	0	1	0	0	1	0	0	1	0	0	5	0
Lane Group Flow (vph)	57	929	0	56	1190	0	81	378	0	42	669	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	5.5	48.0		5.4	47.9		6.7	27.0		4.5	24.8	
Effective Green, g (s)	5.5	48.0		5.4	47.9		6.7	27.0		4.5	24.8	
Actuated g/C Ratio	0.06	0.48		0.05	0.48		0.07	0.27		0.05	0.25	
Clearance Time (s)	3.2	3.5		3.2	3.5		3.2	4.4		3.2	4.4	
Vehicle Extension (s)	0.5	2.0		0.5	2.0		0.5	2.0		0.5	2.0	
Lane Grp Cap (vph)	98	1708		96	1705		120	959		80	872	
v/s Ratio Prot	c0.03	0.26		0.03	c0.34		c0.05	0.11		0.02	c0.19	
v/s Ratio Perm												
v/c Ratio	0.58	0.54		0.58	0.70		0.68	0.39		0.53	0.77	
Uniform Delay, d1	45.7	17.9		45.8	20.0		45.2	29.4		46.3	34.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.2		5.7	1.0		11.2	0.1		2.8	3.7	
Delay (s)	51.3	18.1		51.5	21.0		56.4	29.5		49.2	38.2	
Level of Service	D	B		D	C		E	C		D	D	
Approach Delay (s)		20.0			22.4			34.3			38.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	99.2	Sum of lost time (s)	14.3
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	805	65	96	438	52	108	570	262	127	233	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.4	4.4	4.0	4.4	4.4	4.0	3.5	3.5	4.0	3.5	3.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.79	0.79	0.79	0.95	0.95	0.95
Adj. Flow (vph)	139	970	78	107	487	58	137	722	332	134	245	124
RTOR Reduction (vph)	0	0	18	0	0	42	0	0	160	0	0	101
Lane Group Flow (vph)	139	970	60	107	487	16	137	722	172	134	245	23
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.8	26.4	26.4	10.5	25.1	25.1	26.6	27.0	27.0	11.6	12.0	12.0
Effective Green, g (s)	11.8	26.4	26.4	10.5	25.1	25.1	26.6	27.0	27.0	11.6	12.0	12.0
Actuated g/C Ratio	0.13	0.29	0.29	0.11	0.27	0.27	0.29	0.30	0.30	0.13	0.13	0.13
Clearance Time (s)	4.0	4.4	4.4	4.0	4.4	4.4	4.0	3.5	3.5	4.0	3.5	3.5
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.5	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	229	1469	457	203	972	435	515	1045	468	225	465	208
v/s Ratio Prot	c0.08	c0.19		0.06	0.14		0.08	c0.20		c0.08	0.07	
v/s Ratio Perm			0.04			0.01			0.11			0.01
v/c Ratio	0.61	0.66	0.13	0.53	0.50	0.04	0.27	0.69	0.37	0.60	0.53	0.11
Uniform Delay, d1	37.6	28.6	24.0	38.1	27.9	24.3	24.9	28.5	25.5	37.7	37.1	35.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.9	0.0	1.1	0.1	0.0	0.1	1.6	0.2	2.8	0.5	0.1
Delay (s)	40.7	29.4	24.1	39.3	28.0	24.3	25.0	30.1	25.6	40.5	37.5	35.1
Level of Service	D	C	C	D	C	C	C	C	C	D	D	D
Approach Delay (s)		30.4			29.5			28.3			37.7	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	11.5
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	566	75	189	826	105	73	464	86	61	518	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.4	4.4	4.0	4.4	4.4	4.0	3.5	3.5	4.0	3.5	3.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.91	0.91	0.91	0.86	0.86	0.86	0.91	0.91	0.91
Adj. Flow (vph)	125	590	78	208	908	115	85	540	100	67	569	160
RTOR Reduction (vph)	0	0	29	0	0	58	0	0	68	0	0	48
Lane Group Flow (vph)	125	590	49	208	908	57	85	540	32	67	569	112
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.2	27.3	27.3	16.1	32.2	32.2	7.5	23.7	23.7	6.2	22.4	22.4
Effective Green, g (s)	11.2	27.3	27.3	16.1	32.2	32.2	7.5	23.7	23.7	6.2	22.4	22.4
Actuated g/C Ratio	0.13	0.31	0.31	0.18	0.36	0.36	0.08	0.27	0.27	0.07	0.25	0.25
Clearance Time (s)	4.0	4.4	4.4	4.0	4.4	4.4	4.0	3.5	3.5	4.0	3.5	3.5
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.5	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	222	1556	484	319	1278	571	149	940	421	123	889	398
v/s Ratio Prot	0.07	0.12		c0.12	c0.26		0.05	c0.15		0.04	c0.16	
v/s Ratio Perm			0.03			0.04			0.02			0.07
v/c Ratio	0.56	0.38	0.10	0.65	0.71	0.10	0.57	0.57	0.08	0.54	0.64	0.28
Uniform Delay, d1	36.7	24.3	22.2	33.9	24.5	18.9	39.3	28.4	24.6	40.1	29.8	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	0.0	3.6	1.6	0.0	3.3	0.5	0.0	2.6	1.2	0.1
Delay (s)	38.6	24.4	22.2	37.6	26.1	18.9	42.6	28.9	24.6	42.8	31.0	27.1
Level of Service	D	C	C	D	C	B	D	C	C	D	C	C
Approach Delay (s)		26.4			27.3			29.9			31.2	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	7.5
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	553	452	139	418	17	39	29	39	24	235	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4742		1770	5055		1770	1863	1583	1770	1822	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4742		1770	5055		1770	1863	1583	1770	1822	
Peak-hour factor, PHF	0.72	0.72	0.72	0.72	0.72	0.72	0.78	0.78	0.78	0.67	0.67	0.67
Adj. Flow (vph)	265	768	628	193	581	24	50	37	50	36	351	60
RTOR Reduction (vph)	0	91	0	0	3	0	0	0	34	0	4	0
Lane Group Flow (vph)	265	1305	0	193	602	0	50	37	16	36	407	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	36.1	39.1		16.3	19.3		6.5	34.1	34.1	3.8	31.4	
Effective Green, g (s)	36.1	39.1		16.3	19.3		6.5	34.1	34.1	3.8	31.4	
Actuated g/C Ratio	0.33	0.36		0.15	0.18		0.06	0.31	0.31	0.03	0.29	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	1.5	1.5	1.0	1.5	
Lane Grp Cap (vph)	581	1687		263	888		105	578	491	61	521	
v/s Ratio Prot	0.15	c0.28		0.11	c0.12		c0.03	0.02		0.02	c0.22	
v/s Ratio Perm									0.01			
v/c Ratio	0.46	0.95dr		0.73	0.68		0.48	0.06	0.03	0.59	0.78	
Uniform Delay, d1	29.1	31.5		44.7	42.4		50.1	26.7	26.4	52.3	36.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	2.1		8.8	1.6		1.2	0.0	0.0	9.8	6.9	
Delay (s)	29.4	33.5		53.5	44.0		51.3	26.7	26.4	62.0	43.0	
Level of Service	C	C		D	D		D	C	C	E	D	
Approach Delay (s)		32.9			46.3			35.6			44.6	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	17.2
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	529	41	23	709	28	184	197	60	48	75	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6		4.0	4.6		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5030		1770	5057		1770	1863	1583	1770	1656	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5030		1770	5057		1770	1863	1583	1770	1656	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.68	0.68	0.68	0.94	0.94	0.94
Adj. Flow (vph)	159	551	43	25	771	30	271	290	88	51	80	226
RTOR Reduction (vph)	0	5	0	0	3	0	0	0	56	0	72	0
Lane Group Flow (vph)	159	589	0	25	798	0	271	290	32	51	234	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	15.0	34.1		3.1	22.2		21.5	34.1	34.1	5.5	18.1	
Effective Green, g (s)	15.0	34.1		3.1	22.2		21.5	34.1	34.1	5.5	18.1	
Actuated g/C Ratio	0.16	0.37		0.03	0.24		0.23	0.37	0.37	0.06	0.19	
Clearance Time (s)	4.0	4.6		4.0	4.6		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	1.5	1.5	1.0	1.5	
Lane Grp Cap (vph)	284	1836		59	1202		407	680	578	104	321	
v/s Ratio Prot	c0.09	0.12		0.01	c0.16		c0.15	0.16		0.03	c0.14	
v/s Ratio Perm									0.02			
v/c Ratio	0.56	0.32		0.42	0.66		0.67	0.43	0.06	0.49	0.73	
Uniform Delay, d1	36.2	21.3		44.3	32.2		32.7	22.3	19.2	42.6	35.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.0		1.8	1.1		3.2	0.2	0.0	1.3	6.9	
Delay (s)	37.5	21.4		46.1	33.3		35.9	22.5	19.2	43.9	42.2	
Level of Service	D	C		D	C		D	C	B	D	D	
Approach Delay (s)		24.8			33.7			27.6			42.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	30.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	433	66	45	556	9	21	38	33	23	36	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.6		4.0	4.5	4.5	4.0	4.5	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5074		1770	1863	1583	1770	1778	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5074		1770	1863	1583	1770	1778	
Peak-hour factor, PHF	0.76	0.76	0.76	0.72	0.72	0.72	0.64	0.64	0.64	0.63	0.63	0.63
Adj. Flow (vph)	149	570	87	62	772	12	33	59	52	37	57	25
RTOR Reduction (vph)	0	0	43	0	1	0	0	0	47	0	13	0
Lane Group Flow (vph)	149	570	44	62	783	0	33	59	5	37	69	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	9.4	20.7	20.7	6.9	18.2		1.8	5.3	5.3	1.9	5.4	
Effective Green, g (s)	9.4	20.7	20.7	6.9	18.2		1.8	5.3	5.3	1.9	5.4	
Actuated g/C Ratio	0.18	0.40	0.40	0.13	0.35		0.03	0.10	0.10	0.04	0.10	
Clearance Time (s)	4.0	4.6	4.6	4.0	4.6		4.0	4.5	4.5	4.0	4.5	
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.5	1.5	1.0	1.5	
Lane Grp Cap (vph)	321	2028	631	235	1779		61	190	162	65	185	
v/s Ratio Prot	c0.08	0.11		0.04	c0.15		0.02	0.03		c0.02	c0.04	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	0.46	0.28	0.07	0.26	0.44		0.54	0.31	0.03	0.57	0.38	
Uniform Delay, d1	19.0	10.6	9.6	20.2	12.9		24.6	21.6	21.0	24.6	21.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.0	0.0	0.2	0.1		5.2	0.3	0.0	6.7	0.5	
Delay (s)	19.4	10.6	9.7	20.4	13.0		29.8	21.9	21.0	31.2	22.1	
Level of Service	B	B	A	C	B		C	C	C	C	C	
Approach Delay (s)		12.1			13.5			23.4			25.0	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	12.6
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	533	30	16	660	14	43	30	39	17	16	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.6		4.0	4.5	4.5	4.0	4.5	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5069		1770	1863	1583	1770	1678	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5069		1770	1863	1583	1770	1678	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.72	0.72	0.72	0.76	0.76	0.76
Adj. Flow (vph)	65	567	32	17	702	15	60	42	54	22	21	41
RTOR Reduction (vph)	0	0	16	0	1	0	0	0	45	0	36	0
Lane Group Flow (vph)	65	567	16	17	716	0	60	42	9	22	26	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	3.1	18.2	18.2	1.4	16.5		3.0	7.6	7.6	0.8	5.4	
Effective Green, g (s)	3.1	18.2	18.2	1.4	16.5		3.0	7.6	7.6	0.8	5.4	
Actuated g/C Ratio	0.07	0.40	0.40	0.03	0.37		0.07	0.17	0.17	0.02	0.12	
Clearance Time (s)	4.0	4.6	4.6	4.0	4.6		4.0	4.5	4.5	4.0	4.5	
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.5	1.5	1.0	1.5	
Lane Grp Cap (vph)	122	2052	639	55	1855		118	314	267	31	201	
v/s Ratio Prot	c0.04	0.11		0.01	c0.14		c0.03	c0.02		0.01	0.02	
v/s Ratio Perm			0.01						0.01			
v/c Ratio	0.53	0.28	0.03	0.31	0.39		0.51	0.13	0.03	0.71	0.13	
Uniform Delay, d1	20.3	9.0	8.1	21.4	10.6		20.3	15.9	15.7	22.0	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	0.0	0.0	1.2	0.0		1.3	0.1	0.0	46.1	0.1	
Delay (s)	22.5	9.1	8.1	22.5	10.6		21.6	16.0	15.7	68.2	17.9	
Level of Service	C	A	A	C	B		C	B	B	E	B	
Approach Delay (s)		10.3			10.9			18.1			31.0	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	12.6
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	344	83	67	497	15	64	195	118	16	127	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.6	4.6	4.0	4.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4936		1770	5063		1770	1863	1583	1770	1794	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4936		1770	5063		1770	1863	1583	1770	1794	
Peak-hour factor, PHF	0.86	0.86	0.86	0.78	0.78	0.78	0.70	0.70	0.70	0.80	0.80	0.80
Adj. Flow (vph)	114	400	97	86	637	19	91	279	169	20	159	52
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	115	0	7	0
Lane Group Flow (vph)	114	469	0	86	654	0	91	279	54	20	204	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	6.8	16.6		5.8	15.6		6.0	19.8	19.8	1.7	15.5	
Effective Green, g (s)	6.8	16.6		5.8	15.6		6.0	19.8	19.8	1.7	15.5	
Actuated g/C Ratio	0.11	0.27		0.09	0.25		0.10	0.32	0.32	0.03	0.25	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6	4.6	4.0	4.6	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lane Grp Cap (vph)	196	1334		167	1286		173	601	510	49	453	
v/s Ratio Prot	c0.06	0.09		0.05	c0.13		c0.05	c0.15		0.01	0.11	
v/s Ratio Perm									0.03			
v/c Ratio	0.58	0.35		0.51	0.51		0.53	0.46	0.11	0.41	0.45	
Uniform Delay, d1	25.9	18.1		26.5	19.6		26.3	16.6	14.6	29.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.8	0.1		1.1	0.1		1.3	0.2	0.0	2.0	0.3	
Delay (s)	28.8	18.1		27.6	19.7		27.7	16.8	14.6	31.4	19.6	
Level of Service	C	B		C	B		C	B	B	C	B	
Approach Delay (s)		20.1			20.6			17.9			20.6	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	557	55	103	460	36	39	162	112	44	185	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9		4.0	4.6	4.6	4.0	4.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5017		1770	5030		1770	1863	1583	1770	1817	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5017		1770	5030		1770	1863	1583	1770	1817	
Peak-hour factor, PHF	0.76	0.76	0.76	0.86	0.86	0.86	0.90	0.90	0.90	0.76	0.76	0.76
Adj. Flow (vph)	120	733	72	120	535	42	43	180	124	58	243	47
RTOR Reduction (vph)	0	8	0	0	7	0	0	0	94	0	4	0
Lane Group Flow (vph)	120	797	0	120	570	0	43	180	30	58	286	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	11.2	20.3		9.4	18.5		3.5	16.6	16.6	5.2	18.3	
Effective Green, g (s)	11.2	20.3		9.4	18.5		3.5	16.6	16.6	5.2	18.3	
Actuated g/C Ratio	0.16	0.29		0.14	0.27		0.05	0.24	0.24	0.08	0.27	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6	4.6	4.0	4.6	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lane Grp Cap (vph)	287	1476		241	1349		90	448	381	133	482	
v/s Ratio Prot	0.07	c0.16		c0.07	0.11		0.02	0.10		c0.03	c0.16	
v/s Ratio Perm									0.02			
v/c Ratio	0.42	0.54		0.50	0.42		0.48	0.40	0.08	0.44	0.59	
Uniform Delay, d1	26.0	20.4		27.6	20.8		31.9	22.0	20.3	30.5	22.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.2		0.6	0.1		1.5	0.2	0.0	0.8	1.3	
Delay (s)	26.3	20.7		28.2	20.9		33.3	22.2	20.3	31.3	23.4	
Level of Service	C	C		C	C		C	C	C	C	C	
Approach Delay (s)		21.4			22.2			22.9			24.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑↑	↱	↰	↑↑		↰	↑↑	
Volume (vph)	0	287	124	131	390	35	180	69	0	16	45	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.9	4.9	5.3	5.3		5.3	5.3	
Lane Util. Factor		0.95	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	5085	1583	1770	3539		1770	3483	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.70	1.00		0.70	1.00	
Satd. Flow (perm)		3539	1583	1770	5085	1583	1313	3539		1302	3483	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.81	0.81	0.81	0.66	0.66	0.66
Adj. Flow (vph)	0	363	157	172	513	46	222	85	0	24	68	8
RTOR Reduction (vph)	0	0	114	0	0	24	0	0	0	0	6	0
Lane Group Flow (vph)	0	363	43	172	513	22	222	85	0	24	70	0
Turn Type			Prot	Prot		Perm	Perm			Perm		
Protected Phases		2	2	1	6			8			4	
Permitted Phases						6	8			4		
Actuated Green, G (s)		11.1	11.1	4.0	19.1	19.1	11.2	11.2		11.2	11.2	
Effective Green, g (s)		11.1	11.1	4.0	19.1	19.1	11.2	11.2		11.2	11.2	
Actuated g/C Ratio		0.27	0.27	0.10	0.47	0.47	0.28	0.28		0.28	0.28	
Clearance Time (s)		4.9	4.9	4.0	4.9	4.9	5.3	5.3		5.3	5.3	
Vehicle Extension (s)		2.0	2.0	1.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		970	434	175	2398	747	363	979		360	963	
v/s Ratio Prot		c0.10	0.03	c0.10	0.10			0.02			0.02	
v/s Ratio Perm						0.01	c0.17			0.02		
v/c Ratio		0.37	0.10	0.98	0.21	0.03	0.61	0.09		0.07	0.07	
Uniform Delay, d1		11.9	11.0	18.2	6.3	5.7	12.8	10.9		10.8	10.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0	62.5	0.0	0.0	2.1	0.0		0.0	0.0	
Delay (s)		12.0	11.0	80.7	6.3	5.7	14.9	10.9		10.8	10.8	
Level of Service		B	B	F	A	A	B	B		B	B	
Approach Delay (s)		11.7			23.8			13.8			10.8	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	14.2
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑↑	↱	↰	↑↑		↰	↑↑	
Volume (vph)	0	563	274	166	385	38	83	70	0	31	105	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.0	4.9	4.9	5.3	5.3		5.3	5.3	
Lane Util. Factor		0.95	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	5085	1583	1770	3539		1770	3539	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.66	1.00		0.71	1.00	
Satd. Flow (perm)		3539	1583	1770	5085	1583	1233	3539		1314	3539	
Peak-hour factor, PHF	0.73	0.73	0.73	0.96	0.96	0.96	0.93	0.93	0.93	0.74	0.74	0.74
Adj. Flow (vph)	0	771	375	173	401	40	89	75	0	42	142	0
RTOR Reduction (vph)	0	0	220	0	0	16	0	0	0	0	0	0
Lane Group Flow (vph)	0	771	155	173	401	24	89	75	0	42	142	0
Turn Type			Prot	Prot		Perm	Perm			Perm		
Protected Phases		2	2	1	6			8			4	
Permitted Phases						6	8			4		
Actuated Green, G (s)		17.6	17.6	4.4	26.0	26.0	6.5	6.5		6.5	6.5	
Effective Green, g (s)		17.6	17.6	4.4	26.0	26.0	6.5	6.5		6.5	6.5	
Actuated g/C Ratio		0.41	0.41	0.10	0.61	0.61	0.15	0.15		0.15	0.15	
Clearance Time (s)		4.9	4.9	4.0	4.9	4.9	5.3	5.3		5.3	5.3	
Vehicle Extension (s)		2.0	2.0	1.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		1459	652	182	3096	964	188	539		200	539	
v/s Ratio Prot		c0.22	0.10	c0.10	0.08			0.02			0.04	
v/s Ratio Perm						0.02	c0.07			0.03		
v/c Ratio		0.53	0.24	0.95	0.13	0.03	0.47	0.14		0.21	0.26	
Uniform Delay, d1		9.4	8.2	19.0	3.5	3.3	16.5	15.7		15.9	16.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.1	51.9	0.0	0.0	0.7	0.0		0.2	0.1	
Delay (s)		9.6	8.2	71.0	3.6	3.3	17.2	15.7		16.0	16.1	
Level of Service		A	A	E	A	A	B	B		B	B	
Approach Delay (s)		9.2			22.5			16.5			16.1	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	42.7	Sum of lost time (s)	14.2
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	34	8	8	39	14	4	234	9	15	179	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		4.6	4.6		4.6	4.6	4.6
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1812			1794		1770	1852		1770	1863	1583
Flt Permitted		0.97			0.95		0.62	1.00		0.57	1.00	1.00
Satd. Flow (perm)		1758			1721		1161	1852		1059	1863	1583
Peak-hour factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76	0.77	0.77	0.77	0.83	0.83	0.83
Adj. Flow (vph)	6	44	10	11	51	18	5	304	12	18	216	11
RTOR Reduction (vph)	0	7	0	0	13	0	0	2	0	0	0	6
Lane Group Flow (vph)	0	53	0	0	67	0	5	314	0	18	216	5
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		6
Actuated Green, G (s)		7.6			7.6		13.0	13.0		13.0	13.0	13.0
Effective Green, g (s)		7.6			7.6		13.0	13.0		13.0	13.0	13.0
Actuated g/C Ratio		0.26			0.26		0.44	0.44		0.44	0.44	0.44
Clearance Time (s)		4.6			4.6		4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)		448			439		506	808		462	813	691
v/s Ratio Prot								c0.17			0.12	
v/s Ratio Perm		0.03			c0.04		0.00			0.02		0.00
v/c Ratio		0.12			0.15		0.01	0.39		0.04	0.27	0.01
Uniform Delay, d1		8.5			8.6		4.8	5.7		4.8	5.4	4.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.2			0.3		0.0	0.7		0.1	0.4	0.0
Delay (s)		8.8			8.9		4.8	6.4		4.9	5.7	4.8
Level of Service		A			A		A	A		A	A	A
Approach Delay (s)		8.8			8.9			6.3			5.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	29.8	Sum of lost time (s)	9.2
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	73	20	18	74	28	6	245	20	17	218	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		4.6	4.6		4.6	4.6	4.6
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.97			0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1806			1790		1770	1842		1770	1863	1583
Flt Permitted		0.97			0.95		0.59	1.00		0.53	1.00	1.00
Satd. Flow (perm)		1766			1715		1103	1842		981	1863	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.88	0.88	0.88	0.74	0.74	0.74	0.80	0.80	0.80
Adj. Flow (vph)	9	78	21	20	84	32	8	331	27	21	272	14
RTOR Reduction (vph)	0	11	0	0	14	0	0	4	0	0	0	7
Lane Group Flow (vph)	0	97	0	0	122	0	8	354	0	21	272	7
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		6
Actuated Green, G (s)		12.2			12.2		19.0	19.0		19.0	19.0	19.0
Effective Green, g (s)		12.2			12.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio		0.30			0.30		0.47	0.47		0.47	0.47	0.47
Clearance Time (s)		4.6			4.6		4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)		533			518		519	866		461	876	744
v/s Ratio Prot								c0.19			0.15	
v/s Ratio Perm		0.05			c0.07		0.01			0.02		0.00
v/c Ratio		0.18			0.24		0.02	0.41		0.05	0.31	0.01
Uniform Delay, d1		10.4			10.6		5.7	7.0		5.8	6.6	5.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3			0.5		0.0	0.7		0.1	0.4	0.0
Delay (s)		10.8			11.1		5.7	7.7		5.9	7.1	5.7
Level of Service		B			B		A	A		A	A	A
Approach Delay (s)		10.8			11.1			7.6			6.9	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	40.4	Sum of lost time (s)	9.2
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	183	22	11	96	23	6	233	14	43	453	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1809			3506			3459	
Flt Permitted	0.66	1.00	1.00	0.61	1.00			0.94			0.91	
Satd. Flow (perm)	1238	1863	1583	1138	1809			3298			3163	
Peak-hour factor, PHF	0.77	0.77	0.77	0.82	0.82	0.82	0.81	0.81	0.81	0.79	0.79	0.79
Adj. Flow (vph)	99	238	29	13	117	28	7	288	17	54	573	91
RTOR Reduction (vph)	0	0	19	0	17	0	0	8	0	0	22	0
Lane Group Flow (vph)	99	238	10	13	128	0	0	304	0	0	696	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	11.8	11.8	11.8	11.8	11.8			15.2			15.2	
Effective Green, g (s)	11.8	11.8	11.8	11.8	11.8			15.2			15.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33			0.43			0.43	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6			4.0			4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	410	618	525	377	600			1408			1350	
v/s Ratio Prot		c0.13			0.07							
v/s Ratio Perm	0.08		0.01	0.01				0.09			c0.22	
v/c Ratio	0.24	0.39	0.02	0.03	0.21			0.22			0.52	
Uniform Delay, d1	8.6	9.1	8.0	8.0	8.6			6.4			7.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.0	0.1			0.0			0.1	
Delay (s)	8.8	9.3	8.0	8.1	8.6			6.5			7.6	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		9.0			8.6			6.5			7.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	35.6	Sum of lost time (s)	8.6
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	216	25	19	166	41	18	412	25	39	380	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.97			0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1807			3503			3462	
Flt Permitted	0.62	1.00	1.00	0.59	1.00			0.92			0.88	
Satd. Flow (perm)	1155	1863	1583	1098	1807			3243			3048	
Peak-hour factor, PHF	0.78	0.78	0.78	0.94	0.94	0.94	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	88	277	32	20	177	44	22	515	31	44	427	63
RTOR Reduction (vph)	0	0	17	0	14	0	0	10	0	0	25	0
Lane Group Flow (vph)	88	277	15	20	207	0	0	558	0	0	509	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	17.2	17.2	17.2	17.2	17.2			11.1			11.1	
Effective Green, g (s)	17.2	17.2	17.2	17.2	17.2			11.1			11.1	
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47			0.30			0.30	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6			4.0			4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	538	868	738	512	842			976			917	
v/s Ratio Prot		c0.15			0.11							
v/s Ratio Perm	0.08		0.01	0.02				c0.17			0.17	
v/c Ratio	0.16	0.32	0.02	0.04	0.25			0.57			0.55	
Uniform Delay, d1	5.7	6.2	5.3	5.4	5.9			10.9			10.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.0	0.1			0.5			0.4	
Delay (s)	5.7	6.3	5.3	5.4	6.0			11.4			11.2	
Level of Service	A	A	A	A	A			B			B	
Approach Delay (s)		6.1			5.9			11.4			11.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	36.9	Sum of lost time (s)	8.6
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	64	11	13	133	14	13	249	10	12	174	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1823		1770	1837		1770	1852		1770	1846	
Flt Permitted	0.62	1.00		0.70	1.00		0.62	1.00		0.53	1.00	
Satd. Flow (perm)	1164	1823		1307	1837		1158	1852		992	1846	
Peak-hour factor, PHF	0.88	0.88	0.88	0.69	0.69	0.69	0.81	0.81	0.81	0.85	0.85	0.85
Adj. Flow (vph)	15	73	12	19	193	20	16	307	12	14	205	13
RTOR Reduction (vph)	0	7	0	0	4	0	0	2	0	0	3	0
Lane Group Flow (vph)	15	78	0	19	209	0	16	317	0	14	215	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		17.1	17.1		17.1	17.1	
Effective Green, g (s)	17.0	17.0		17.0	17.0		17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.39	0.39		0.39	0.39	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	457	716		513	721		457	731		392	729	
v/s Ratio Prot		0.04			c0.11			c0.17			0.12	
v/s Ratio Perm	0.01			0.01			0.01			0.01		
v/c Ratio	0.03	0.11		0.04	0.29		0.04	0.43		0.04	0.29	
Uniform Delay, d1	8.1	8.3		8.1	9.0		8.0	9.6		8.0	9.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.0	0.2		0.0	0.6		0.1	0.3	
Delay (s)	8.1	8.4		8.1	9.2		8.1	10.1		8.1	9.3	
Level of Service	A	A		A	A		A	B		A	A	
Approach Delay (s)		8.4			9.1			10.0			9.2	
Approach LOS		A			A			B			A	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	9.2
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	114	10	9	79	10	13	291	4	6	202	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840		1770	1832		1770	1859		1770	1855	
Flt Permitted	0.68	1.00		0.66	1.00		0.59	1.00		0.51	1.00	
Satd. Flow (perm)	1270	1840		1220	1832		1090	1859		952	1855	
Peak-hour factor, PHF	0.77	0.77	0.77	0.76	0.76	0.76	0.79	0.79	0.79	0.73	0.73	0.73
Adj. Flow (vph)	38	148	13	12	104	13	16	368	5	8	277	8
RTOR Reduction (vph)	0	4	0	0	6	0	0	1	0	0	1	0
Lane Group Flow (vph)	38	157	0	12	111	0	16	372	0	8	284	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		18.9	18.9		18.9	18.9	
Effective Green, g (s)	12.2	12.2		12.2	12.2		18.9	18.9		18.9	18.9	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.47	0.47		0.47	0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	384	557		369	555		511	872		446	870	
v/s Ratio Prot		c0.09			0.06			c0.20			0.15	
v/s Ratio Perm	0.03			0.01			0.01			0.01		
v/c Ratio	0.10	0.28		0.03	0.20		0.03	0.43		0.02	0.33	
Uniform Delay, d1	10.1	10.7		9.9	10.4		5.8	7.1		5.7	6.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.0	0.1		0.0	0.5		0.0	0.3	
Delay (s)	10.2	10.9		9.9	10.6		5.8	7.6		5.8	7.0	
Level of Service	B	B		A	B		A	A		A	A	
Approach Delay (s)		10.8			10.5			7.5			7.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	40.3	Sum of lost time (s)	9.2
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	3	18	15	30	9	19	6	26	44	290	696	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1		5.1	5.1			4.7	5.1	4.7	
Lane Util. Factor		1.00	1.00		1.00	1.00			1.00	0.91	0.88	
Frt		1.00	0.90		1.00	0.91			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1770	1676		1770	1688			1770	5085	2787	
Flt Permitted		0.71	1.00		0.72	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1323	1676		1341	1688			1770	5085	2787	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.71	0.71	0.71	0.71	0.89	0.89	0.89	0.89
Adj. Flow (vph)	4	23	19	38	13	27	8	37	49	326	782	25
RTOR Reduction (vph)	0	0	35	0	0	34	0	0	0	0	1	0
Lane Group Flow (vph)	0	27	22	0	13	38	0	0	49	326	806	0
Turn Type	Perm	Perm			Perm				Prot		Over	
Protected Phases			8			8			5	2	7	
Permitted Phases	8	8			8							
Actuated Green, G (s)		6.0	6.0		6.0	6.0			3.9	14.7	21.4	
Effective Green, g (s)		6.0	6.0		6.0	6.0			3.9	14.7	21.4	
Actuated g/C Ratio		0.09	0.09		0.09	0.09			0.06	0.22	0.32	
Clearance Time (s)		5.1	5.1		5.1	5.1			4.7	5.1	4.7	
Vehicle Extension (s)		0.2	0.2		0.2	0.2			2.0	6.8	8.0	
Lane Grp Cap (vph)		120	153		122	154			105	1134	905	
v/s Ratio Prot			0.01			c0.02			0.03	c0.06	c0.29	
v/s Ratio Perm		0.02			0.01							
v/c Ratio		0.23	0.15		0.11	0.25			0.47	0.29	0.89	
Uniform Delay, d1		27.8	27.6		27.5	27.9			30.0	21.3	21.1	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		0.3	0.2		0.1	0.3			1.2	0.5	12.8	
Delay (s)		28.1	27.8		27.6	28.2			31.2	21.7	33.9	
Level of Service		C	C		C	C			C	C	C	
Approach Delay (s)			27.9			28.1				30.5		
Approach LOS			C			C				C		

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	19.6
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations							
Volume (vph)	8	40	242	5	908	101	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.1		4.7		
Lane Util. Factor		1.00	0.91		0.94		
Frt		1.00	1.00		0.98		
Flt Protected		0.95	1.00		0.96		
Satd. Flow (prot)		1770	5070		4922		
Flt Permitted		0.95	1.00		0.96		
Satd. Flow (perm)		1770	5070		4922		
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.79	0.79	0.79
Adj. Flow (vph)	10	50	302	6	1149	128	86
RTOR Reduction (vph)	0	0	2	0	5	0	0
Lane Group Flow (vph)	0	60	306	0	1358	0	0
Turn Type	Prot	Prot					
Protected Phases	1	1	6		7		
Permitted Phases							
Actuated Green, G (s)		4.2	15.0		21.4		
Effective Green, g (s)		4.2	15.0		21.4		
Actuated g/C Ratio		0.06	0.23		0.32		
Clearance Time (s)		4.7	5.1		4.7		
Vehicle Extension (s)		2.0	6.8		8.0		
Lane Grp Cap (vph)		113	1154		1598		
v/s Ratio Prot		c0.03	0.06		0.28		
v/s Ratio Perm							
v/c Ratio		0.53	0.27		0.85		
Uniform Delay, d1		29.9	20.9		20.7		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		2.4	0.4		5.6		
Delay (s)		32.3	21.3		26.3		
Level of Service		C	C		C		
Approach Delay (s)			23.1		26.3		
Approach LOS			C		C		

Intersection Summary

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	8	71	23	32	19	11	5	49	46	362	854	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1		5.1	5.1			4.7	5.1	4.7	
Lane Util. Factor		1.00	1.00		1.00	1.00			1.00	0.91	0.88	
Frt		1.00	0.91		1.00	0.88			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1770	1699		1770	1631			1770	5085	2787	
Flt Permitted		0.69	1.00		0.71	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1291	1699		1325	1631			1770	5085	2787	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.66	0.66	0.66	0.66	0.73	0.73	0.73	0.73
Adj. Flow (vph)	10	90	29	41	29	17	8	74	63	496	1170	23
RTOR Reduction (vph)	0	0	36	0	0	64	0	0	0	0	1	0
Lane Group Flow (vph)	0	100	34	0	29	35	0	0	63	496	1192	0
Turn Type	Perm	Perm			Perm				Prot		Over	
Protected Phases			8			8			5	2	7	
Permitted Phases	8	8			8							
Actuated Green, G (s)		10.0	10.0		10.0	10.0			6.0	20.6	20.8	
Effective Green, g (s)		10.0	10.0		10.0	10.0			6.0	20.6	20.8	
Actuated g/C Ratio		0.13	0.13		0.13	0.13			0.08	0.27	0.28	
Clearance Time (s)		5.1	5.1		5.1	5.1			4.7	5.1	4.7	
Vehicle Extension (s)		0.2	0.2		0.2	0.2			2.0	6.8	8.0	
Lane Grp Cap (vph)		172	227		177	217			142	1397	773	
v/s Ratio Prot			0.02			0.02			c0.04	c0.10	c0.43	
v/s Ratio Perm		c0.08			0.02							
v/c Ratio		0.58	0.15		0.16	0.16			0.44	0.36	1.54	
Uniform Delay, d1		30.5	28.7		28.8	28.8			32.9	21.9	27.1	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		3.2	0.1		0.2	0.1			0.8	0.5	250.5	
Delay (s)		33.7	28.9		29.0	28.9			33.7	22.4	277.6	
Level of Service		C	C		C	C			C	C	F	
Approach Delay (s)			31.7			28.9				196.6		
Approach LOS			C			C				F		

Intersection Summary

HCM Average Control Delay	113.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Volume (vph)	32	4	310	5	1	832	31	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7	5.1			4.7		
Lane Util. Factor		1.00	0.91			0.94		
Frt		1.00	1.00			0.99		
Flt Protected		0.95	1.00			0.95		
Satd. Flow (prot)		1770	5072			4977		
Flt Permitted		0.95	1.00			0.85		
Satd. Flow (perm)		1770	5072			4415		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.81	0.81	0.81	0.81
Adj. Flow (vph)	36	4	344	6	1	1027	38	17
RTOR Reduction (vph)	0	0	2	0	0	1	0	0
Lane Group Flow (vph)	0	40	348	0	0	1082	0	0
Turn Type	Prot	Prot						
Protected Phases	1	1	6			7		
Permitted Phases								
Actuated Green, G (s)		4.0	18.6			20.8		
Effective Green, g (s)		4.0	18.6			20.8		
Actuated g/C Ratio		0.05	0.25			0.28		
Clearance Time (s)		4.7	5.1			4.7		
Vehicle Extension (s)		2.0	6.8			8.0		
Lane Grp Cap (vph)		94	1258			1224		
v/s Ratio Prot		0.02	0.07					
v/s Ratio Perm						0.24		
v/c Ratio		0.43	0.28			27.50dr		
Uniform Delay, d1		34.4	22.8			25.9		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		1.1	0.4			9.4		
Delay (s)		35.5	23.2			35.4		
Level of Service		D	C			D		
Approach Delay (s)			24.4			35.4		
Approach LOS			C			D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	2067	25	0	0	0	0	231	87	134	525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6						5.6		4.2	5.6	
Lane Util. Factor		0.91						0.95		1.00	0.95	
Frt		1.00						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		5060						3394		1770	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		5060						3394		1770	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.84	0.84	0.84	0.73	0.73	0.73
Adj. Flow (vph)	152	2199	27	0	0	0	0	275	104	184	719	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	40	0	0	0	0
Lane Group Flow (vph)	0	2377	0	0	0	0	0	339	0	184	719	0
Turn Type	Split									Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases												
Actuated Green, G (s)		29.5						12.2		10.0	26.4	
Effective Green, g (s)		29.5						12.2		10.0	26.4	
Actuated g/C Ratio		0.44						0.18		0.15	0.39	
Clearance Time (s)		5.6						5.6		4.2	5.6	
Vehicle Extension (s)		4.1						3.2		2.0	4.3	
Lane Grp Cap (vph)		2225						617		264	1392	
v/s Ratio Prot		c0.47						0.10		c0.10	c0.20	
v/s Ratio Perm												
v/c Ratio		1.07						0.55		0.70	0.52	
Uniform Delay, d1		18.8						25.0		27.1	15.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		40.4						1.0		6.3	0.5	
Delay (s)		59.2						26.0		33.4	16.0	
Level of Service		E						C		C	B	
Approach Delay (s)		59.2			0.0			26.0			19.5	
Approach LOS		E			A			C			B	

Intersection Summary

HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	9.8
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	1864	45	0	0	0	0	383	140	168	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6						5.6		4.2	5.6	
Lane Util. Factor		0.91						0.95		1.00	0.95	
Frt		1.00						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		5056						3397		1770	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		5056						3397		1770	3539	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	102	2004	48	0	0	0	0	435	159	189	494	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	35	0	0	0	0
Lane Group Flow (vph)	0	2151	0	0	0	0	0	559	0	189	494	0
Turn Type	Split									Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases												
Actuated Green, G (s)		29.6						18.1		10.2	32.5	
Effective Green, g (s)		29.6						18.1		10.2	32.5	
Actuated g/C Ratio		0.40						0.25		0.14	0.44	
Clearance Time (s)		5.6						5.6		4.2	5.6	
Vehicle Extension (s)		4.1						3.2		2.0	4.3	
Lane Grp Cap (vph)		2042						839		246	1569	
v/s Ratio Prot		c0.43						c0.16		c0.11	0.14	
v/s Ratio Perm												
v/c Ratio		1.05						0.67		0.77	0.31	
Uniform Delay, d1		21.8						24.9		30.4	13.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		35.7						2.0		12.2	0.2	
Delay (s)		57.6						26.9		42.6	13.4	
Level of Service		E						C		D	B	
Approach Delay (s)		57.6			0.0			26.9			21.5	
Approach LOS		E			A			C			C	

Intersection Summary

HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	15.4
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	1891	32	0	0	0	0	359	132	112	507	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6						5.6	5.6	4.2	5.6	
Lane Util. Factor		0.91						0.95	1.00	1.00	0.95	
Frt		1.00						1.00	0.85	1.00	1.00	
Flt Protected		0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5046						3539	1583	1770	3539	
Flt Permitted		0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5046						3539	1583	1770	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	263	2101	36	0	0	0	0	427	157	132	596	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	62	0	0	0
Lane Group Flow (vph)	0	2398	0	0	0	0	0	427	95	132	596	0
Turn Type	Split								Perm	Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		30.1						18.3	18.3	7.4	29.9	
Effective Green, g (s)		30.1						18.3	18.3	7.4	29.9	
Actuated g/C Ratio		0.42						0.26	0.26	0.10	0.42	
Clearance Time (s)		5.6						5.6	5.6	4.2	5.6	
Vehicle Extension (s)		4.2						5.3	5.3	2.0	3.9	
Lane Grp Cap (vph)		2133						910	407	184	1486	
v/s Ratio Prot		c0.48						c0.12		c0.07	0.17	
v/s Ratio Perm									0.06			
v/c Ratio		1.12						0.47	0.23	0.72	0.40	
Uniform Delay, d1		20.6						22.3	20.9	30.9	14.4	
Progression Factor		1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2		62.8						0.9	0.7	10.5	0.2	
Delay (s)		83.3						23.2	21.6	41.4	14.6	
Level of Service		F						C	C	D	B	
Approach Delay (s)		83.3			0.0			22.8			19.5	
Approach LOS		F			A			C			B	

Intersection Summary			
HCM Average Control Delay	61.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	15.4
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	1956	45	0	0	0	0	628	220	170	683	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6						5.6	5.6	4.2	5.6	
Lane Util. Factor		0.91						0.95	1.00	1.00	0.95	
Frt		1.00						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5045						3539	1583	1770	3539	
Flt Permitted		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5045						3539	1583	1770	3539	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	231	2103	48	0	0	0	0	706	247	179	719	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	38	0	0	0
Lane Group Flow (vph)	0	2379	0	0	0	0	0	706	209	179	719	0
Turn Type	Split								Perm	Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		29.3						23.4	23.4	10.2	37.8	
Effective Green, g (s)		29.3						23.4	23.4	10.2	37.8	
Actuated g/C Ratio		0.37						0.30	0.30	0.13	0.48	
Clearance Time (s)		5.6						5.6	5.6	4.2	5.6	
Vehicle Extension (s)		4.2						5.3	5.3	2.0	3.9	
Lane Grp Cap (vph)		1888						1058	473	231	1708	
v/s Ratio Prot		c0.47						c0.20		c0.10	0.20	
v/s Ratio Perm									0.13			
v/c Ratio		1.26						0.67	0.44	0.77	0.42	
Uniform Delay, d1		24.5						24.0	22.2	32.9	13.1	
Progression Factor		1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2		121.6						2.2	1.5	13.7	0.2	
Delay (s)		146.1						26.3	23.7	46.6	13.4	
Level of Service		F						C	C	D	B	
Approach Delay (s)		146.1			0.0			25.6			20.0	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	92.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	15.4
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	8	3	7	5	2	7	5	233	4	4	202	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.50	0.50	0.50	0.84	0.84	0.84	0.80	0.80	0.80
Hourly flow rate (vph)	14	5	12	10	4	14	6	277	5	5	252	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								722			817	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	574	560	256	573	562	280	260			282		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	549	535	223	548	537	280	227			282		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	98	98	99	98	100			100		
cM capacity (veh/h)	421	436	795	422	435	759	1307			1280		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	28	288	265
Volume Left	14	10	6	5
Volume Right	12	14	5	8
cSH	519	545	1307	1280
Volume to Capacity	0.06	0.05	0.00	0.00
Queue Length 95th (ft)	5	4	0	0
Control Delay (s)	12.4	12.0	0.2	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	12.4	12.0	0.2	0.2
Approach LOS	B	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	0	3	8	3	7	4	338	2	5	210	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.58	0.58	0.64	0.64	0.64	0.74	0.74	0.74	0.79	0.79	0.79
Hourly flow rate (vph)	7	0	5	12	5	11	5	457	3	6	266	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								722			817	
pX, platoon unblocked	0.94	0.94	0.93	0.94	0.94	0.98	0.93			0.98		
vC, conflicting volume	764	752	269	756	754	458	272			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	667	654	180	658	656	434	184			436		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	96	99	98	100			99		
cM capacity (veh/h)	339	361	805	351	360	608	1298			1099		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	28	465	278
Volume Left	7	12	5	6
Volume Right	5	11	3	6
cSH	451	422	1298	1099
Volume to Capacity	0.03	0.07	0.00	0.01
Queue Length 95th (ft)	2	5	0	0
Control Delay (s)	13.2	14.1	0.1	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	13.2	14.1	0.1	0.2
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑					↰	✣	
Volume (vph)	0	1414	744	0	1553	611	0	0	0	171	0	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.4		4.4					4.1	4.0	
Lane Util. Factor		0.86	0.86		0.91					0.95	0.95	
Frt		0.98	0.85		0.96					1.00	0.86	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4694	1362		4870					1681	1522	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		4694	1362		4870					1681	1522	
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	1520	800	0	1806	710	0	0	0	190	0	180
RTOR Reduction (vph)	0	20	173	0	60	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1780	347	0	2456	0	0	0	0	171	194	0
Turn Type			Perm							Prot		
Protected Phases		2			6					4		
Permitted Phases			2									
Actuated Green, G (s)		36.4	36.4		36.4					9.7	9.7	
Effective Green, g (s)		36.4	36.4		36.4					9.7	9.7	
Actuated g/C Ratio		0.67	0.67		0.67					0.18	0.18	
Clearance Time (s)		4.4	4.4		4.4					4.1		
Vehicle Extension (s)		4.5	4.5		4.5					4.1		
Lane Grp Cap (vph)		3129	908		3247					299	270	
v/s Ratio Prot		0.38			c0.50					0.10	0.13	
v/s Ratio Perm			0.25									
v/c Ratio		0.57	0.38		0.76					0.57	0.72	
Uniform Delay, d1		4.9	4.1		6.1					20.5	21.2	
Progression Factor		1.00	1.00		1.00					1.00	1.00	
Incremental Delay, d2		0.3	0.5		1.2					3.3	9.5	
Delay (s)		5.2	4.5		7.3					23.8	30.7	
Level of Service		A	A		A					C	C	
Approach Delay (s)		5.1			7.3			0.0			27.5	
Approach LOS		A			A			A			C	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑					↰	↕	
Volume (vph)	0	1277	884	0	2151	615	0	0	0	179	0	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.4		4.4					4.1	4.0	
Lane Util. Factor		0.86	0.86		0.91					0.95	0.95	
Frt		0.96	0.85		0.97					1.00	0.86	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4638	1362		4916					1681	1517	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		4638	1362		4916					1681	1517	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	1303	902	0	2195	628	0	0	0	206	0	283
RTOR Reduction (vph)	0	51	186	0	48	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	1649	319	0	2775	0	0	0	0	185	302	0
Turn Type			Perm							Prot		
Protected Phases		2			6					4		
Permitted Phases			2									
Actuated Green, G (s)		35.7	35.7		35.7					12.4	12.4	
Effective Green, g (s)		35.7	35.7		35.7					12.4	12.4	
Actuated g/C Ratio		0.63	0.63		0.63					0.22	0.22	
Clearance Time (s)		4.4	4.4		4.4					4.1		
Vehicle Extension (s)		4.5	4.5		4.5					4.1		
Lane Grp Cap (vph)		2925	859		3101					368	332	
v/s Ratio Prot		0.36			c0.56					0.11	0.20	
v/s Ratio Perm			0.23									
v/c Ratio		0.56	0.37		0.89					0.50	0.91	
Uniform Delay, d1		6.0	5.0		8.9					19.4	21.6	
Progression Factor		1.00	1.00		1.00					1.00	1.00	
Incremental Delay, d2		0.4	0.5		4.0					1.6	28.5	
Delay (s)		6.3	5.5		12.8					20.9	50.0	
Level of Service		A	A		B					C	D	
Approach Delay (s)		6.2			12.8			0.0			39.0	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	302	1296	0	0	1166	383	731	0	0	198	0	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.9			4.9	5.9	5.9			5.9		5.2
Lane Util. Factor	0.97	0.91			0.91	1.00	0.97			0.97		1.00
Frt	1.00	1.00			1.00	0.85	1.00			1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95			0.95		1.00
Satd. Flow (prot)	3433	5085			5085	1583	3433			3433		1583
Flt Permitted	0.95	1.00			1.00	1.00	0.95			0.95		1.00
Satd. Flow (perm)	3433	5085			5085	1583	3433			3433		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.83	0.83	0.83	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	332	1424	0	0	1405	461	881	0	0	236	0	320
RTOR Reduction (vph)	0	0	0	0	0	330	0	0	0	0	0	8
Lane Group Flow (vph)	332	1424	0	0	1405	131	881	0	0	236	0	312
Turn Type	Prot					Over	Prot			Prot		Over
Protected Phases	5	2			6	4	8			4		5
Permitted Phases												
Actuated Green, G (s)	19.8	60.1			35.1	28.0	28.0			28.0		19.8
Effective Green, g (s)	19.8	60.1			35.1	28.0	28.0			28.0		19.8
Actuated g/C Ratio	0.20	0.61			0.35	0.28	0.28			0.28		0.20
Clearance Time (s)	5.2	4.9			4.9	5.9	5.9			5.9		5.2
Vehicle Extension (s)	2.0	4.5			4.5	4.5	3.3			4.5		2.0
Lane Grp Cap (vph)	687	3090			1805	448	972			972		317
v/s Ratio Prot	0.10	0.28			c0.28	0.08	c0.26			0.07		c0.20
v/s Ratio Perm												
v/c Ratio	0.48	0.46			0.78	0.29	0.91			0.24		0.98
Uniform Delay, d1	35.0	10.6			28.4	27.7	34.2			27.3		39.4
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00		1.00
Incremental Delay, d2	0.2	0.2			2.5	0.6	11.9			0.2		45.8
Delay (s)	35.2	10.8			30.9	28.3	46.1			27.5		85.2
Level of Service	D	B			C	C	D			C		F
Approach Delay (s)		15.4			30.3			46.1			60.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	389	1115	0	0	1838	362	718	0	0	440	0	434
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.9			4.9	5.9	5.9			5.9		5.2
Lane Util. Factor	0.97	0.91			0.91	1.00	0.97			0.97		1.00
Frt	1.00	1.00			1.00	0.85	1.00			1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95			0.95		1.00
Satd. Flow (prot)	3433	5085			5085	1583	3433			3433		1583
Flt Permitted	0.95	1.00			1.00	1.00	0.95			0.95		1.00
Satd. Flow (perm)	3433	5085			5085	1583	3433			3433		1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	401	1149	0	0	1915	377	780	0	0	494	0	488
RTOR Reduction (vph)	0	0	0	0	0	219	0	0	0	0	0	10
Lane Group Flow (vph)	401	1149	0	0	1915	158	780	0	0	494	0	478
Turn Type	Prot					Over	Prot			Prot		Over
Protected Phases	5	2			6	4	8			4		5
Permitted Phases												
Actuated Green, G (s)	19.8	60.2			35.2	26.3	26.3			26.3		19.8
Effective Green, g (s)	19.8	60.2			35.2	26.3	26.3			26.3		19.8
Actuated g/C Ratio	0.20	0.62			0.36	0.27	0.27			0.27		0.20
Clearance Time (s)	5.2	4.9			4.9	5.9	5.9			5.9		5.2
Vehicle Extension (s)	2.0	4.5			4.5	4.5	3.3			4.5		2.0
Lane Grp Cap (vph)	699	3146			1840	428	928			928		322
v/s Ratio Prot	0.12	0.23			c0.38	0.10	c0.23			0.14		c0.30
v/s Ratio Perm												
v/c Ratio	0.57	0.37			1.04	0.37	0.84			0.53		1.48
Uniform Delay, d1	34.9	9.1			31.0	28.8	33.5			30.3		38.8
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00		1.00
Incremental Delay, d2	0.7	0.1			32.5	0.9	7.0			0.9		233.5
Delay (s)	35.7	9.3			63.5	29.7	40.6			31.2		272.2
Level of Service	D	A			E	C	D			C		F
Approach Delay (s)		16.1			57.9			40.6			151.0	
Approach LOS		B			E			D			F	

Intersection Summary

HCM Average Control Delay	60.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	97.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1764	440	559	1195	4	306	8	443	14	16	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.9	5.9	5.2	4.9		5.9	5.9	5.2		4.4	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	3433	3537		1681	1689	1583		1751	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	3433	3537		1681	1689	1583		1751	
Peak-hour factor, PHF	0.91	0.91	0.91	0.82	0.82	0.82	0.90	0.90	0.90	0.75	0.75	0.75
Adj. Flow (vph)	29	1938	484	682	1457	5	340	9	492	19	21	20
RTOR Reduction (vph)	0	0	119	0	0	0	0	0	406	0	14	0
Lane Group Flow (vph)	29	1938	365	682	1462	0	173	176	86	0	46	0
Turn Type	Prot		Perm	Prot			Split		Over	Split		
Protected Phases	5	2		1	6		8	8	1	7	7	
Permitted Phases			2									
Actuated Green, G (s)	11.9	56.3	56.3	19.9	66.3		19.8	19.8	19.9		6.1	
Effective Green, g (s)	11.9	56.3	56.3	19.9	66.3		19.8	19.8	19.9		6.1	
Actuated g/C Ratio	0.10	0.46	0.46	0.16	0.54		0.16	0.16	0.16		0.05	
Clearance Time (s)	4.2	5.9	5.9	5.2	4.9		5.9	5.9	5.2		4.4	
Vehicle Extension (s)	2.0	5.7	5.7	2.0	5.7		5.6	5.6	2.0		1.0	
Lane Grp Cap (vph)	171	1613	722	553	1899		270	271	255		86	
v/s Ratio Prot	0.02	c0.55		c0.20	0.41		0.10	c0.10	0.05		c0.03	
v/s Ratio Perm			0.23									
v/c Ratio	0.17	1.20	0.51	1.23	0.77		0.64	0.65	0.34		0.53	
Uniform Delay, d1	51.3	33.6	23.8	51.8	22.6		48.5	48.6	46.0		57.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.2	96.9	1.4	120.0	2.4		7.7	8.0	0.3		3.1	
Delay (s)	51.4	130.5	25.2	171.8	25.0		56.2	56.6	46.2		60.4	
Level of Service	D	F	C	F	C		E	E	D		E	
Approach Delay (s)		108.8			71.7			50.5			60.4	
Approach LOS		F			E			D			E	

Intersection Summary

HCM Average Control Delay	84.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	123.5	Sum of lost time (s)	21.4
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1543	428	496	1637	12	576	9	437	19	20	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.9	5.9	5.2	4.9		5.9	5.9	5.2		4.4	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	3433	3535		1681	1688	1583		1755	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	3433	3535		1681	1688	1583		1755	
Peak-hour factor, PHF	0.89	0.89	0.89	0.94	0.94	0.94	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	40	1734	481	528	1741	13	662	10	502	23	24	21
RTOR Reduction (vph)	0	0	137	0	0	0	0	0	403	0	12	0
Lane Group Flow (vph)	40	1734	344	528	1754	0	338	334	99	0	56	0
Turn Type	Prot		Perm	Prot			Split		Over	Split		
Protected Phases	5	2		1	6		8	8	1	7	7	
Permitted Phases			2									
Actuated Green, G (s)	12.2	56.1	56.1	19.8	65.7		24.1	24.1	19.8		6.7	
Effective Green, g (s)	12.2	56.1	56.1	19.8	65.7		24.1	24.1	19.8		6.7	
Actuated g/C Ratio	0.10	0.44	0.44	0.15	0.51		0.19	0.19	0.15		0.05	
Clearance Time (s)	4.2	5.9	5.9	5.2	4.9		5.9	5.9	5.2		4.4	
Vehicle Extension (s)	2.0	5.7	5.7	2.0	5.7		5.6	5.6	2.0		1.0	
Lane Grp Cap (vph)	169	1550	693	531	1813		316	318	245		92	
v/s Ratio Prot	0.02	c0.49		0.15	c0.50		c0.20	0.20	0.06		c0.03	
v/s Ratio Perm			0.22									
v/c Ratio	0.24	1.12	0.50	0.99	0.97		1.07	1.05	0.40		0.61	
Uniform Delay, d1	53.6	36.0	25.9	54.1	30.2		52.0	52.0	48.8		59.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.3	62.7	1.5	37.3	14.4		70.3	64.3	0.4		7.5	
Delay (s)	53.9	98.7	27.3	91.4	44.6		122.3	116.3	49.2		66.9	
Level of Service	D	F	C	F	D		F	F	D		E	
Approach Delay (s)		82.7			55.4			89.3			66.9	
Approach LOS		F			E			F			E	

Intersection Summary

HCM Average Control Delay	73.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	128.1	Sum of lost time (s)	21.1
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	273	1505	99	77	367	0	0	434	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6		3.7	4.6			4.6	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frt					0.99		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					5009		1770	3539			3472	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					5009		1770	3539			3472	
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82	0.94	0.94	0.94	0.78	0.78	0.78
Adj. Flow (vph)	0	0	0	333	1835	121	82	390	0	0	556	81
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	0	0	0	2283	0	82	390	0	0	624	0
Turn Type				Split			Prot					
Protected Phases				6	6		3	8			4	
Permitted Phases												
Actuated Green, G (s)					30.8		6.5	31.7			21.5	
Effective Green, g (s)					30.8		6.5	31.7			21.5	
Actuated g/C Ratio					0.43		0.09	0.44			0.30	
Clearance Time (s)					4.6		3.7	4.6			4.6	
Vehicle Extension (s)					4.8		2.0	2.9			5.1	
Lane Grp Cap (vph)					2152		160	1565			1041	
v/s Ratio Prot					c0.46		c0.05	0.11			c0.18	
v/s Ratio Perm												
v/c Ratio					1.06		0.51	0.25			0.60	
Uniform Delay, d1					20.5		31.1	12.5			21.4	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					38.0		1.2	0.1			1.4	
Delay (s)					58.4		32.2	12.6			22.9	
Level of Service					E		C	B			C	
Approach Delay (s)		0.0			58.4			16.0			22.9	
Approach LOS		A			E			B			C	

Intersection Summary			
HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.9
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	210	1753	58	118	356	0	0	377	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6		3.7	4.6			4.6	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frt					1.00		1.00	1.00			0.97	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					5037		1770	3539			3424	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					5037		1770	3539			3424	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	223	1865	62	134	405	0	0	428	119
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	0	0	0	2147	0	134	405	0	0	519	0
Turn Type				Split			Prot					
Protected Phases				6	6		3	8			4	
Permitted Phases												
Actuated Green, G (s)					31.1		8.4	31.9			19.8	
Effective Green, g (s)					31.1		8.4	31.9			19.8	
Actuated g/C Ratio					0.43		0.12	0.44			0.27	
Clearance Time (s)					4.6		3.7	4.6			4.6	
Vehicle Extension (s)					4.8		2.0	2.9			5.1	
Lane Grp Cap (vph)					2170		206	1564			939	
v/s Ratio Prot					c0.43		c0.08	0.11			c0.15	
v/s Ratio Perm												
v/c Ratio					0.99		0.65	0.26			0.55	
Uniform Delay, d1					20.4		30.5	12.7			22.4	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					16.8		5.5	0.1			1.2	
Delay (s)					37.2		36.0	12.8			23.6	
Level of Service					D		D	B			C	
Approach Delay (s)		0.0			37.2			18.6			23.6	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.9
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	175	1990	61	98	525	0	0	498	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6		4.2	4.6			4.6	4.6
Lane Util. Factor					0.91		1.00	0.95			0.95	1.00
Frt					1.00		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					5045		1770	3539			3539	1583
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5045		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	192	2187	67	111	597	0	0	519	131
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	73
Lane Group Flow (vph)	0	0	0	0	2443	0	111	597	0	0	519	58
Turn Type				Split			Prot					Prot
Protected Phases				6	6		3	8			4	4
Permitted Phases												
Actuated Green, G (s)					31.2		7.6	32.2			20.4	20.4
Effective Green, g (s)					31.2		7.6	32.2			20.4	20.4
Actuated g/C Ratio					0.43		0.10	0.44			0.28	0.28
Clearance Time (s)					4.6		4.2	4.6			4.6	4.6
Vehicle Extension (s)					4.9		2.0	3.1			5.2	5.2
Lane Grp Cap (vph)					2168		185	1570			994	445
v/s Ratio Prot					c0.48		c0.06	0.17			c0.15	0.04
v/s Ratio Perm												
v/c Ratio					1.13		0.60	0.38			0.52	0.13
Uniform Delay, d1					20.7		31.0	13.5			22.0	19.5
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					63.7		3.5	0.2			1.0	0.3
Delay (s)					84.4		34.5	13.7			23.0	19.8
Level of Service					F		C	B			C	B
Approach Delay (s)		0.0			84.4			16.9			22.3	
Approach LOS		A			F			B			C	

Intersection Summary

HCM Average Control Delay	61.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	13.4
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	159	1782	91	183	670	0	0	677	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6		4.2	4.6			4.6	4.6
Lane Util. Factor					0.91		1.00	0.95			0.95	1.00
Frt					0.99		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					5031		1770	3539			3539	1583
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5031		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	167	1876	96	191	698	0	0	736	175
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	67
Lane Group Flow (vph)	0	0	0	0	2134	0	191	698	0	0	736	108
Turn Type				Split			Prot					Prot
Protected Phases				6	6		3	8			4	4
Permitted Phases												
Actuated Green, G (s)					30.4		13.0	41.5			24.3	24.3
Effective Green, g (s)					30.4		13.0	41.5			24.3	24.3
Actuated g/C Ratio					0.37		0.16	0.51			0.30	0.30
Clearance Time (s)					4.6		4.2	4.6			4.6	4.6
Vehicle Extension (s)					4.9		2.0	3.1			5.2	5.2
Lane Grp Cap (vph)					1886		284	1811			1060	474
v/s Ratio Prot					c0.42		c0.11	0.20			c0.21	0.07
v/s Ratio Perm												
v/c Ratio					1.13		0.67	0.39			0.69	0.23
Uniform Delay, d1					25.3		32.0	12.0			25.1	21.3
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					66.5		4.9	0.1			2.6	0.5
Delay (s)					91.8		36.9	12.2			27.7	21.9
Level of Service					F		D	B			C	C
Approach Delay (s)		0.0			91.8			17.5			26.6	
Approach LOS		A			F			B			C	

Intersection Summary

HCM Average Control Delay	60.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	13.4
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBT	SBR	NWR2
Lane Configurations										
Volume (vph)	21	151	7	2	332	139	61	575	18	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9	4.9	4.0	4.9		4.9
Lane Util. Factor		0.91			0.91	0.91	1.00	0.95		1.00
Frt		0.99			0.99	0.85	1.00	1.00		0.86
Flt Protected		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)		5018			3370	1441	1770	3523		1611
Flt Permitted		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)		5018			3370	1441	1770	3523		1611
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.85	0.85	0.70	0.70	0.70	0.67
Adj. Flow (vph)	23	166	8	2	391	164	87	821	26	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	199	0	0	407	148	87	847	0	6
Turn Type	Perm					Perm	Prot			custom
Protected Phases		4			2		1	6		
Permitted Phases	4					2				8
Actuated Green, G (s)		13.9			27.3	27.3	4.5	28.3		13.9
Effective Green, g (s)		13.9			27.3	27.3	4.5	28.3		13.9
Actuated g/C Ratio		0.23			0.46	0.46	0.08	0.48		0.23
Clearance Time (s)		4.9			4.9	4.9	4.0	4.9		4.9
Vehicle Extension (s)		2.0			2.0	2.0	3.0	2.0		2.0
Lane Grp Cap (vph)		1172			1546	661	134	1676		376
v/s Ratio Prot					c0.12		0.05	c0.24		
v/s Ratio Perm		0.04				0.10				0.00
v/c Ratio		0.17			0.26	0.22	0.65	0.51		0.01
Uniform Delay, d1		18.2			9.9	9.7	26.7	10.8		17.5
Progression Factor		1.00			1.00	1.00	1.23	0.48		1.00
Incremental Delay, d2		0.0			0.0	0.1	10.1	0.1		0.0
Delay (s)		18.2			9.9	9.8	43.1	5.3		17.5
Level of Service		B			A	A	D	A		B
Approach Delay (s)		18.2			9.9			8.8		
Approach LOS		B			A			A		

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	9.8
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBT	SBR	NWR2
Lane Configurations										
Volume (vph)	55	327	9	15	545	238	56	517	16	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.9	4.9	4.0	4.9		4.9
Lane Util. Factor		0.91			0.91	0.91	1.00	0.95		1.00
Frt		0.99			0.99	0.85	1.00	1.00		0.86
Flt Protected		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)		5007			3369	1441	1770	3523		1611
Flt Permitted		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)		5007			3369	1441	1770	3523		1611
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.80	0.80	0.96	0.96	0.96	0.79
Adj. Flow (vph)	71	425	12	19	681	298	58	539	17	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	527	0	0	711	268	58	556	0	6
Turn Type	Perm					Perm	Prot			custom
Protected Phases		4			2		1	6		
Permitted Phases	4					2				8
Actuated Green, G (s)		13.0			25.5	25.5	3.5	20.6		13.0
Effective Green, g (s)		13.0			25.5	25.5	3.5	20.6		13.0
Actuated g/C Ratio		0.23			0.46	0.46	0.06	0.37		0.23
Clearance Time (s)		4.9			4.9	4.9	4.0	4.9		4.9
Vehicle Extension (s)		2.0			2.0	2.0	1.0	2.0		2.0
Lane Grp Cap (vph)		1167			1540	659	111	1301		375
v/s Ratio Prot					c0.21		0.03	c0.16		
v/s Ratio Perm		0.11				0.19				0.00
v/c Ratio		0.45			0.46	0.41	0.52	0.43		0.01
Uniform Delay, d1		18.3			10.4	10.1	25.3	13.2		16.5
Progression Factor		1.00			1.00	1.00	1.33	0.39		1.00
Incremental Delay, d2		0.1			0.1	0.1	2.0	0.1		0.0
Delay (s)		18.4			10.5	10.3	35.6	5.3		16.5
Level of Service		B			B	B	D	A		B
Approach Delay (s)		18.4			10.4			8.1		
Approach LOS		B			B			A		

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	14.7
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	94	903	53	0	290	66	32	172	34	86	139	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9			4.9		4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.91			0.91		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99			0.97		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5043			4943		1770	3451		1770	1863	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5043			4943		1770	3451		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.88	0.88	0.88	0.71	0.71	0.71
Adj. Flow (vph)	107	1026	60	0	341	78	36	195	39	121	196	66
RTOR Reduction (vph)	0	8	0	0	42	0	0	20	0	0	0	54
Lane Group Flow (vph)	107	1078	0	0	377	0	36	214	0	121	196	12
Turn Type	Prot						Split			Split		Perm
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	6.9	29.2			18.6		11.0	11.0		12.5	12.5	12.5
Effective Green, g (s)	6.9	29.2			18.6		11.0	11.0		12.5	12.5	12.5
Actuated g/C Ratio	0.10	0.44			0.28		0.16	0.16		0.19	0.19	0.19
Clearance Time (s)	3.7	4.9			4.9		4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	1.5	4.5			4.5		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	183	2204			1376		291	568		331	349	296
v/s Ratio Prot	c0.06	c0.21			0.08		0.02	c0.06		0.07	c0.11	
v/s Ratio Perm												0.01
v/c Ratio	0.58	0.49			0.27		0.12	0.38		0.37	0.56	0.04
Uniform Delay, d1	28.6	13.5			18.8		23.8	24.8		23.7	24.7	22.2
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	0.3			0.2		0.2	0.4		0.7	2.1	0.1
Delay (s)	31.6	13.8			19.0		24.0	25.3		24.4	26.7	22.3
Level of Service	C	B			B		C	C		C	C	C
Approach Delay (s)		15.4			19.0			25.1			25.2	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	12.9
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	1240	54	0	405	82	67	189	75	80	184	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9			4.9		4.6	4.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.91			0.91		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99			0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5053			4957		1770	3388		1770	1863	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5053			4957		1770	3388		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.73	0.73	0.73	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	104	1348	59	0	555	112	84	236	94	94	216	61
RTOR Reduction (vph)	0	5	0	0	31	0	0	51	0	0	0	51
Lane Group Flow (vph)	104	1402	0	0	636	0	84	279	0	94	216	10
Turn Type	Prot						Split			Split		Perm
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	7.3	37.7			26.7		12.3	12.3		13.3	13.3	13.3
Effective Green, g (s)	7.3	37.7			26.7		12.3	12.3		13.3	13.3	13.3
Actuated g/C Ratio	0.09	0.49			0.34		0.16	0.16		0.17	0.17	0.17
Clearance Time (s)	3.7	4.9			4.9		4.6	4.6		4.6	4.6	4.6
Vehicle Extension (s)	1.5	4.5			4.5		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	167	2461			1710		281	538		304	320	272
v/s Ratio Prot	0.06	c0.28			0.13		0.05	c0.08		0.05	c0.12	
v/s Ratio Perm												0.01
v/c Ratio	0.62	0.57			0.37		0.30	0.52		0.31	0.68	0.04
Uniform Delay, d1	33.7	14.1			19.1		28.7	29.8		28.0	30.0	26.7
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	0.4			0.2		0.6	0.8		0.6	5.5	0.1
Delay (s)	38.8	14.5			19.3		29.3	30.7		28.6	35.6	26.8
Level of Service	D	B			B		C	C		C	D	C
Approach Delay (s)		16.2			19.3			30.4			32.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	14.1
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	199	27	0	0	0	0	545	152	154	1124	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1	4.1						4.4		3.7	4.4	
Lane Util. Factor	1.00	0.91						0.91		1.00	0.91	
Frt	1.00	0.98						0.97		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	4994						4919		1770	5085	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	1770	4994						4919		1770	5085	
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.78	0.78	0.78	0.77	0.77	0.77
Adj. Flow (vph)	335	280	38	0	0	0	0	699	195	200	1460	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	58	0	0	0	0
Lane Group Flow (vph)	335	298	0	0	0	0	0	836	0	200	1460	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	17.4	17.4						21.8		12.1	37.6	
Effective Green, g (s)	17.4	17.4						21.8		12.1	37.6	
Actuated g/C Ratio	0.27	0.27						0.34		0.19	0.59	
Clearance Time (s)	4.1	4.1						4.4		3.7	4.4	
Vehicle Extension (s)	3.0	3.0						4.0		2.0	4.0	
Lane Grp Cap (vph)	485	1368						1689		337	3011	
v/s Ratio Prot	c0.19	0.06						0.17		c0.11	c0.29	
v/s Ratio Perm												
v/c Ratio	0.69	0.22						0.50		0.59	0.48	
Uniform Delay, d1	20.6	17.8						16.5		23.5	7.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	4.2	0.1						0.3		1.9	0.2	
Delay (s)	24.9	17.9						16.8		25.3	7.6	
Level of Service	C	B						B		C	A	
Approach Delay (s)		21.5			0.0			16.8			9.7	
Approach LOS		C			A			B			A	

Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	7.8
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	224	28	0	0	0	0	763	381	291	743	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1	4.1						4.4		3.7	4.4	
Lane Util. Factor	1.00	0.91						0.91		1.00	0.91	
Frt	1.00	0.98						0.95		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	5001						4831		1770	5085	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	1770	5001						4831		1770	5085	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.89	0.89	0.89	0.94	0.94	0.94
Adj. Flow (vph)	214	267	33	0	0	0	0	857	428	310	790	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	99	0	0	0	0
Lane Group Flow (vph)	214	280	0	0	0	0	0	1186	0	310	790	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.0	14.0						25.1		16.2	45.0	
Effective Green, g (s)	14.0	14.0						25.1		16.2	45.0	
Actuated g/C Ratio	0.21	0.21						0.37		0.24	0.67	
Clearance Time (s)	4.1	4.1						4.4		3.7	4.4	
Vehicle Extension (s)	3.0	3.0						4.0		2.0	4.0	
Lane Grp Cap (vph)	367	1037						1796		425	3390	
v/s Ratio Prot	c0.12	0.06						c0.25		c0.18	0.16	
v/s Ratio Perm												
v/c Ratio	0.58	0.27						0.66		0.73	0.23	
Uniform Delay, d1	24.1	22.5						17.7		23.6	4.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.1						1.0		5.3	0.0	
Delay (s)	26.5	22.6						18.7		28.9	4.5	
Level of Service	C	C						B		C	A	
Approach Delay (s)		24.2			0.0			18.7			11.4	
Approach LOS		C			A			B			B	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	67.5	Sum of lost time (s)	12.2
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	232	220	43	44	307	0	0	432	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.9	4.9		4.0	4.9			4.9	
Lane Util. Factor				0.91	0.91		1.00	0.95			0.95	
Frt				1.00	0.98		1.00	1.00			0.99	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1610	3290		1770	3539			3516	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1610	3290		1770	3539			3516	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82	0.54	0.54	0.54
Adj. Flow (vph)	0	0	0	273	259	51	54	374	0	0	800	37
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	191	382	0	54	374	0	0	835	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				13.9	13.9		3.5	27.3			28.3	
Effective Green, g (s)				13.9	13.9		3.5	27.3			28.3	
Actuated g/C Ratio				0.23	0.23		0.06	0.46			0.48	
Clearance Time (s)				4.9	4.9		4.0	4.9			4.9	
Vehicle Extension (s)				2.0	2.0		1.0	2.0			2.0	
Lane Grp Cap (vph)				376	769		104	1624			1672	
v/s Ratio Prot							c0.03	0.11			c0.24	
v/s Ratio Perm				c0.12	0.12							
v/c Ratio				0.51	0.50		0.52	0.23			0.50	
Uniform Delay, d1				19.8	19.8		27.2	9.7			10.7	
Progression Factor				1.00	1.00		0.73	0.58			1.00	
Incremental Delay, d2				0.4	0.2		1.8	0.0			0.1	
Delay (s)				20.2	20.0		21.7	5.7			10.8	
Level of Service				C	B		C	A			B	
Approach Delay (s)		0.0			20.0			7.7			10.8	
Approach LOS		A			C			A			B	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	13.8
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	202	224	60	39	556	0	0	380	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.9	4.9		4.0	4.9			4.9	
Lane Util. Factor				0.91	0.91		1.00	0.95			0.95	
Frt				1.00	0.97		1.00	1.00			0.99	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1610	3276		1770	3539			3493	
Flt Permitted				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (perm)				1610	3276		1770	3539			3493	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.76	0.76	0.76	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	222	246	66	51	732	0	0	418	40
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	178	339	0	51	732	0	0	452	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				13.0	13.0		8.4	25.5			20.6	
Effective Green, g (s)				13.0	13.0		8.4	25.5			20.6	
Actuated g/C Ratio				0.23	0.23		0.15	0.46			0.37	
Clearance Time (s)				4.9	4.9		4.0	4.9			4.9	
Vehicle Extension (s)				2.0	2.0		1.0	2.0			2.0	
Lane Grp Cap (vph)				375	763		266	1617			1290	
v/s Ratio Prot							0.03	c0.21			c0.13	
v/s Ratio Perm				c0.11	0.10							
v/c Ratio				0.47	0.44		0.19	0.45			0.35	
Uniform Delay, d1				18.5	18.3		20.7	10.4			12.8	
Progression Factor				1.00	1.00		0.52	0.51			1.00	
Incremental Delay, d2				0.3	0.2		0.1	0.1			0.1	
Delay (s)				18.8	18.5		10.9	5.3			12.8	
Level of Service				B	B		B	A			B	
Approach Delay (s)		0.0			18.6			5.7			12.8	
Approach LOS		A			B			A			B	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	14.7
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑				↱			↱
Volume (veh/h)	0	260	1	0	475	9	0	0	44	0	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.69	0.69	0.69	0.73	0.73	0.73	0.81	0.81	0.81
Hourly flow rate (vph)	0	356	1	0	688	13	0	0	60	0	0	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		471										
pX, platoon unblocked												
vC, conflicting volume	701			358			701	1058	179	873	1052	351
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	701			358			701	1058	179	873	1052	351
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	93	100	100	98
cM capacity (veh/h)	892			1198			317	223	833	227	225	645

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	237	120	459	243	60	16
Volume Left	0	0	0	0	0	0
Volume Right	0	1	0	13	60	16
cSH	1700	1700	1700	1700	833	645
Volume to Capacity	0.14	0.07	0.27	0.14	0.07	0.02
Queue Length 95th (ft)	0	0	0	0	6	2
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	10.7
Lane LOS					A	B
Approach Delay (s)	0.0		0.0		9.7	10.7
Approach LOS					A	B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Volume (veh/h)	0	506	2	0	537	20	0	0	41	0	0	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.85	0.85	0.85	0.68	0.68	0.68
Hourly flow rate (vph)	0	556	2	0	590	22	0	0	48	0	0	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		471										
pX, platoon unblocked												
vC, conflicting volume	612			558			852	1169	279	879	1159	306
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612			558			852	1169	279	879	1159	306
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	93	100	100	96
cM capacity (veh/h)	963			1009			243	192	718	226	194	690

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	371	188	393	219	48	28
Volume Left	0	0	0	0	0	0
Volume Right	0	2	0	22	48	28
cSH	1700	1700	1700	1700	718	690
Volume to Capacity	0.22	0.11	0.23	0.13	0.07	0.04
Queue Length 95th (ft)	0	0	0	0	5	3
Control Delay (s)	0.0	0.0	0.0	0.0	10.4	10.4
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.4	10.4
Approach LOS					B	B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	181	97	231	331	89	136	680	34	126	444	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	16	12
Total Lost time (s)	3.1	6.0		3.1	6.0		3.1	6.0		3.1	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95		0.97	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3354		3433	3427		3433	3982		3433	3947	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3354		3433	3427		3433	3982		3433	3947	
Peak-hour factor, PHF	0.89	0.89	0.89	0.69	0.69	0.69	0.81	0.81	0.81	0.88	0.88	0.88
Adj. Flow (vph)	67	203	109	335	480	129	168	840	42	143	505	60
RTOR Reduction (vph)	0	81	0	0	24	0	0	4	0	0	9	0
Lane Group Flow (vph)	67	231	0	335	585	0	168	878	0	143	556	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.3	13.0		10.5	19.2		7.1	19.1		6.8	18.8	
Effective Green, g (s)	4.3	13.0		10.5	19.2		7.1	19.1		6.8	18.8	
Actuated g/C Ratio	0.06	0.19		0.16	0.28		0.11	0.28		0.10	0.28	
Clearance Time (s)	3.1	6.0		3.1	6.0		3.1	6.0		3.1	6.0	
Vehicle Extension (s)	1.0	2.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	113	645		533	973		361	1125		345	1098	
v/s Ratio Prot	0.04	0.07		c0.10	c0.17		0.05	c0.22		0.04	c0.14	
v/s Ratio Perm												
v/c Ratio	0.59	0.36		0.63	0.60		0.47	0.78		0.41	0.51	
Uniform Delay, d1	30.8	23.7		26.7	20.9		28.5	22.3		28.5	20.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	0.1		1.7	0.7		0.3	3.3		0.3	0.1	
Delay (s)	36.3	23.8		28.4	21.6		28.8	25.6		28.8	20.6	
Level of Service	D	C		C	C		C	C		C	C	
Approach Delay (s)		26.0			24.0			26.1			22.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	376	130	263	317	114	209	731	60	188	691	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	16	12
Total Lost time (s)	3.1	6.0		3.1	6.0		3.1	6.0		3.1	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95		0.97	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3403		3433	3399		3433	3965		3433	3987	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3403		3433	3399		3433	3965		3433	3987	
Peak-hour factor, PHF	0.89	0.89	0.89	0.94	0.94	0.94	0.90	0.90	0.90	0.83	0.83	0.83
Adj. Flow (vph)	96	422	146	280	337	121	232	812	67	227	833	35
RTOR Reduction (vph)	0	37	0	0	37	0	0	7	0	0	3	0
Lane Group Flow (vph)	96	531	0	280	421	0	232	872	0	227	865	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.5	15.8		10.3	19.6		8.5	19.2		8.5	19.2	
Effective Green, g (s)	6.5	15.8		10.3	19.6		8.5	19.2		8.5	19.2	
Actuated g/C Ratio	0.09	0.22		0.14	0.27		0.12	0.27		0.12	0.27	
Clearance Time (s)	3.1	6.0		3.1	6.0		3.1	6.0		3.1	6.0	
Vehicle Extension (s)	1.0	2.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	160	747		491	925		405	1057		405	1063	
v/s Ratio Prot	0.05	c0.16		c0.08	0.12		0.07	c0.22		0.07	c0.22	
v/s Ratio Perm												
v/c Ratio	0.60	0.71		0.57	0.46		0.57	0.83		0.56	0.81	
Uniform Delay, d1	31.5	26.0		28.8	21.8		30.0	24.8		30.0	24.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	2.7		1.0	0.1		1.2	5.1		1.1	4.6	
Delay (s)	35.5	28.6		29.8	21.9		31.3	29.9		31.0	29.3	
Level of Service	D	C		C	C		C	C		C	C	
Approach Delay (s)		29.6			24.9			30.2			29.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBR	EBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations												
Volume (vph)	4	7	11	1	3	29	19	20	3	19	6	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	16	12	12	16	12	12
Total Lost time (s)		5.2	5.2				5.2			5.2		
Lane Util. Factor		1.00	1.00				1.00			1.00		
Frt		1.00	0.85				0.96			0.95		
Flt Protected		0.95	1.00				0.98			1.00		
Satd. Flow (prot)		1770	1583				1984			1994		
Flt Permitted		0.95	1.00				0.87			0.97		
Satd. Flow (perm)		1770	1583				1775			1947		
Peak-hour factor, PHF	0.52	0.52	0.52	0.52	0.93	0.93	0.93	0.93	0.60	0.60	0.60	0.60
Adj. Flow (vph)	8	13	21	2	3	31	20	22	5	32	10	13
RTOR Reduction (vph)	0	0	2	0	0	0	10	0	0	7	0	0
Lane Group Flow (vph)	0	21	21	0	0	0	66	0	0	53	0	0
Turn Type	Split		Perm		Perm	Perm			Perm			
Protected Phases	3	3					4			4		
Permitted Phases			3		4	4			4			
Actuated Green, G (s)		3.3	3.3				8.3			8.3		
Effective Green, g (s)		3.3	3.3				8.3			8.3		
Actuated g/C Ratio		0.04	0.04				0.10			0.10		
Clearance Time (s)		5.2	5.2				5.2			5.2		
Vehicle Extension (s)		2.0	2.0				4.5			4.5		
Lane Grp Cap (vph)		68	60				170			187		
v/s Ratio Prot		0.01										
v/s Ratio Perm			c0.01				c0.04			0.03		
v/c Ratio		0.31	0.35				0.39			0.28		
Uniform Delay, d1		40.5	40.6				36.7			36.3		
Progression Factor		1.00	1.00				1.00			1.00		
Incremental Delay, d2		0.9	1.3				2.5			1.4		
Delay (s)		41.4	41.9				39.3			37.8		
Level of Service		D	D				D			D		
Approach Delay (s)		41.7					39.3			37.8		
Approach LOS		D					D			D		

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	21.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	SER2	NWL2	NWL	NWT	NWR
Lane Configurations								
Volume (vph)	24	1082	98	16	25	38	1172	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12
Total Lost time (s)	5.2	5.9				5.2	5.9	
Lane Util. Factor	1.00	0.91				1.00	0.91	
Frt	1.00	0.99				1.00	1.00	
Flt Protected	0.95	1.00				0.95	1.00	
Satd. Flow (prot)	1770	5012				1770	5081	
Flt Permitted	0.95	1.00				0.95	1.00	
Satd. Flow (perm)	1770	5012				1770	5081	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.81	0.81	0.81	0.81
Adj. Flow (vph)	27	1202	109	18	31	47	1447	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	27	1329	0	0	0	78	1456	0
Turn Type	Prot				Prot	Prot		
Protected Phases	1	6			5	5	2	
Permitted Phases								
Actuated Green, G (s)	3.4	46.4				7.0	50.0	
Effective Green, g (s)	3.4	46.4				7.0	50.0	
Actuated g/C Ratio	0.04	0.54				0.08	0.58	
Clearance Time (s)	5.2	5.9				5.2	5.9	
Vehicle Extension (s)	2.0	3.6				2.0	4.3	
Lane Grp Cap (vph)	70	2689				143	2937	
v/s Ratio Prot	0.02	0.27				c0.04	c0.29	
v/s Ratio Perm								
v/c Ratio	0.39	0.49				0.55	0.50	
Uniform Delay, d1	40.5	12.6				38.2	10.8	
Progression Factor	1.00	1.00				1.00	1.00	
Incremental Delay, d2	1.3	0.2				2.3	0.2	
Delay (s)	41.8	12.8				40.5	11.0	
Level of Service	D	B				D	B	
Approach Delay (s)		13.4					12.5	
Approach LOS		B					B	

Intersection Summary

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	SEL	SET
Lane Configurations												
Volume (vph)	27	7	28	120	16	19	7	28	2	5	19	1300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)		5.2	5.2		5.2			5.2			5.2	5.9
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	0.91
Frt		1.00	0.85		0.98			0.98			1.00	1.00
Flt Protected		0.95	1.00		0.96			0.99			0.95	1.00
Satd. Flow (prot)		1770	1583		1999			2050			1770	5066
Flt Permitted		0.95	1.00		0.75			0.94			0.95	1.00
Satd. Flow (perm)		1770	1583		1550			1949			1770	5066
Peak-hour factor, PHF	0.78	0.78	0.78	0.45	0.45	0.45	0.81	0.81	0.81	0.81	0.91	0.91
Adj. Flow (vph)	35	9	36	267	36	42	9	35	2	6	21	1429
RTOR Reduction (vph)	0	0	0	0	3	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	44	36	0	342	0	0	49	0	0	21	1467
Turn Type	Split		Perm	Perm			Perm				Prot	
Protected Phases	3	3			4			4			1	6
Permitted Phases			3	4			4					
Actuated Green, G (s)		6.0	6.0		26.2			26.2			2.5	49.0
Effective Green, g (s)		6.0	6.0		26.2			26.2			2.5	49.0
Actuated g/C Ratio		0.05	0.05		0.24			0.24			0.02	0.45
Clearance Time (s)		5.2	5.2		5.2			5.2			5.2	5.9
Vehicle Extension (s)		2.0	2.0		4.5			4.5			2.0	3.6
Lane Grp Cap (vph)		97	87		371			466			40	2265
v/s Ratio Prot		c0.02									0.01	c0.29
v/s Ratio Perm			0.02		c0.22			0.03				
v/c Ratio		0.45	0.41		0.92			0.11			0.53	0.65
Uniform Delay, d1		50.2	50.1		40.7			32.5			53.0	23.6
Progression Factor		1.00	1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2		1.2	1.2		28.5			0.2			5.6	0.7
Delay (s)		51.4	51.3		69.2			32.7			58.6	24.3
Level of Service		D	D		E			C			E	C
Approach Delay (s)		51.4			69.2			32.7				24.8
Approach LOS		D			E			C				C

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	27.4
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SER	SER2	NWL2	NWL	NWT	NWR
Lane Configurations						
Volume (vph)	28	6	38	17	1225	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)				5.2	5.9	
Lane Util. Factor				1.00	0.91	
Frt				1.00	1.00	
Flt Protected				0.95	1.00	
Satd. Flow (prot)				1770	5076	
Flt Permitted				0.95	1.00	
Satd. Flow (perm)				1770	5076	
Peak-hour factor, PHF	0.91	0.91	0.88	0.88	0.88	0.88
Adj. Flow (vph)	31	7	43	19	1392	18
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	62	1409	0
Turn Type			Prot	Prot		
Protected Phases			5	5	2	
Permitted Phases						
Actuated Green, G (s)				6.9	53.4	
Effective Green, g (s)				6.9	53.4	
Actuated g/C Ratio				0.06	0.49	
Clearance Time (s)				5.2	5.9	
Vehicle Extension (s)				2.0	4.3	
Lane Grp Cap (vph)				111	2473	
v/s Ratio Prot				c0.04	c0.28	
v/s Ratio Perm						
v/c Ratio				0.56	0.57	
Uniform Delay, d1				49.9	19.9	
Progression Factor				1.00	1.00	
Incremental Delay, d2				3.4	0.4	
Delay (s)				53.3	20.4	
Level of Service				D	C	
Approach Delay (s)					21.7	
Approach LOS					C	

Intersection Summary

Movement	WBL2	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	39	472	203	96	49	774	905	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.1	4.1		3.7	4.4	4.4	
Lane Util. Factor		0.86	0.86		1.00	0.91	0.91	
Frt		1.00	0.97		1.00	1.00	0.99	
Flt Protected		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (prot)		1725	4576		1770	5085	5021	
Flt Permitted		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (perm)		1725	4576		1770	5085	5021	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.81	0.81	0.90	0.90
Adj. Flow (vph)	46	555	239	113	60	956	1006	92
RTOR Reduction (vph)	0	7	29	0	0	0	13	0
Lane Group Flow (vph)	0	294	623	0	60	956	1085	0
Turn Type	Split	Split			Prot			
Protected Phases	8	8	8		5	2	6	
Permitted Phases								
Actuated Green, G (s)		16.6	16.6		3.8	24.2	16.7	
Effective Green, g (s)		16.6	16.6		3.8	24.2	16.7	
Actuated g/C Ratio		0.34	0.34		0.08	0.49	0.34	
Clearance Time (s)		4.1	4.1		3.7	4.4	4.4	
Vehicle Extension (s)		3.0	3.0		2.0	0.2	0.2	
Lane Grp Cap (vph)		581	1541		136	2496	1701	
v/s Ratio Prot		c0.17	0.14		0.03	c0.19	c0.22	
v/s Ratio Perm								
v/c Ratio		0.51	0.40		0.44	0.38	0.64	
Uniform Delay, d1		13.1	12.6		21.7	7.9	13.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.7	0.2		0.8	0.0	0.6	
Delay (s)		13.8	12.7		22.6	7.9	14.3	
Level of Service		B	B		C	A	B	
Approach Delay (s)			13.1			8.8	14.3	
Approach LOS			B			A	B	

Intersection Summary

HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	49.3	Sum of lost time (s)	12.9
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL2	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	20	254	359	242	99	854	784	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.1	4.1		3.7	4.4	4.4	
Lane Util. Factor		0.86	0.86		1.00	0.91	0.91	
Frt		1.00	0.94		1.00	1.00	0.97	
Flt Protected		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1725	4521		1770	5085	4958	
Flt Permitted		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		1725	4521		1770	5085	4958	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.91	0.91	0.97	0.97
Adj. Flow (vph)	22	282	399	269	109	938	808	162
RTOR Reduction (vph)	0	3	109	0	0	0	36	0
Lane Group Flow (vph)	0	245	615	0	109	938	934	0
Turn Type	Split	Split			Prot			
Protected Phases	8	8	8		5	2	6	
Permitted Phases								
Actuated Green, G (s)		16.0	16.0		6.4	25.9	15.8	
Effective Green, g (s)		16.0	16.0		6.4	25.9	15.8	
Actuated g/C Ratio		0.32	0.32		0.13	0.51	0.31	
Clearance Time (s)		4.1	4.1		3.7	4.4	4.4	
Vehicle Extension (s)		3.0	3.0		2.0	0.2	0.2	
Lane Grp Cap (vph)		548	1435		225	2613	1554	
v/s Ratio Prot		c0.14	0.14		c0.06	0.18	c0.19	
v/s Ratio Perm								
v/c Ratio		0.45	0.43		0.48	0.36	0.60	
Uniform Delay, d1		13.7	13.6		20.5	7.3	14.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.6	0.2		0.6	0.0	0.5	
Delay (s)		14.3	13.8		21.1	7.3	15.1	
Level of Service		B	B		C	A	B	
Approach Delay (s)			13.9			8.8	15.1	
Approach LOS			B			A	B	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	89	19	111	78	51	36	181	62	101	453	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1		4.0	4.6		4.0	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.94		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1814		1770	1753		1770	3404		1770	3466	
Flt Permitted	0.65	1.00		0.67	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1210	1814		1252	1753		1770	3404		1770	3466	
Peak-hour factor, PHF	0.81	0.81	0.81	0.76	0.76	0.76	0.85	0.85	0.85	0.76	0.76	0.76
Adj. Flow (vph)	38	110	23	146	103	67	42	213	73	133	596	96
RTOR Reduction (vph)	0	7	0	0	21	0	0	31	0	0	10	0
Lane Group Flow (vph)	38	126	0	146	149	0	42	255	0	133	682	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)	10.8	10.8		10.8	10.8		2.0	14.5		6.3	18.8	
Effective Green, g (s)	10.8	10.8		10.8	10.8		2.0	14.5		6.3	18.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.04	0.32		0.14	0.42	
Clearance Time (s)	5.1	5.1		5.1	5.1		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	1.5	1.5		1.5	1.5		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	288	432		298	418		78	1090		246	1438	
v/s Ratio Prot		0.07			0.08		c0.02	0.08		0.08	c0.20	
v/s Ratio Perm	0.03			c0.12								
v/c Ratio	0.13	0.29		0.49	0.36		0.54	0.23		0.54	0.47	
Uniform Delay, d1	13.6	14.1		14.9	14.4		21.2	11.3		18.2	9.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.5	0.2		3.5	0.0		1.3	0.1	
Delay (s)	13.6	14.3		15.3	14.5		24.7	11.4		19.5	9.7	
Level of Service	B	B		B	B		C	B		B	A	
Approach Delay (s)		14.1			14.9			13.1			11.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	45.3	Sum of lost time (s)	13.7
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	105	52	118	109	109	42	444	77	109	372	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1		4.0	4.6		4.0	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.93		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1770		1770	1723		1770	3461		1770	3459	
Flt Permitted	0.57	1.00		0.50	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1061	1770		940	1723		1770	3461		1770	3459	
Peak-hour factor, PHF	0.54	0.54	0.54	0.89	0.89	0.89	0.80	0.80	0.80	0.86	0.86	0.86
Adj. Flow (vph)	178	194	96	133	122	122	52	555	96	127	433	77
RTOR Reduction (vph)	0	14	0	0	28	0	0	13	0	0	13	0
Lane Group Flow (vph)	178	276	0	133	216	0	52	638	0	127	497	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)	19.9	19.9		19.9	19.9		7.4	19.6		7.1	19.3	
Effective Green, g (s)	19.9	19.9		19.9	19.9		7.4	19.6		7.1	19.3	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.12	0.33		0.12	0.32	
Clearance Time (s)	5.1	5.1		5.1	5.1		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	1.5	1.5		1.5	1.5		1.0	2.0		1.0	2.0	
Lane Grp Cap (vph)	350	584		310	569		217	1125		208	1107	
v/s Ratio Prot		0.16			0.13		0.03	c0.18		c0.07	0.14	
v/s Ratio Perm	c0.17			0.14								
v/c Ratio	0.51	0.47		0.43	0.38		0.24	0.57		0.61	0.45	
Uniform Delay, d1	16.3	16.0		15.8	15.5		23.9	16.8		25.3	16.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2		0.3	0.2		0.2	0.4		3.7	0.1	
Delay (s)	16.7	16.3		16.1	15.6		24.1	17.2		29.0	16.4	
Level of Service	B	B		B	B		C	B		C	B	
Approach Delay (s)		16.4			15.8			17.7			18.9	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	13.7
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	128	38	89	106	232	31	197	129	75	356	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.90		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1799		1770	1671		1770	3329		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1799		1770	1671		1770	3329		1770	3466	
Peak-hour factor, PHF	0.73	0.73	0.73	0.81	0.81	0.81	0.80	0.80	0.80	0.79	0.79	0.79
Adj. Flow (vph)	8	175	52	110	131	286	39	246	161	95	451	72
RTOR Reduction (vph)	0	18	0	0	125	0	0	119	0	0	18	0
Lane Group Flow (vph)	8	209	0	110	292	0	39	288	0	95	505	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.6	14.1		3.8	17.3		1.3	13.7		4.3	16.7	
Effective Green, g (s)	0.6	14.1		3.8	17.3		1.3	13.7		4.3	16.7	
Actuated g/C Ratio	0.01	0.27		0.07	0.33		0.03	0.26		0.08	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	20	489		130	557		44	879		147	1115	
v/s Ratio Prot	0.00	0.12		c0.06	c0.17		0.02	0.09		c0.05	c0.15	
v/s Ratio Perm												
v/c Ratio	0.40	0.43		0.85	0.52		0.89	0.33		0.65	0.45	
Uniform Delay, d1	25.5	15.6		23.8	14.0		25.2	15.4		23.1	14.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	0.6		36.9	0.9		92.1	0.2		9.4	0.3	
Delay (s)	38.1	16.2		60.7	14.9		117.3	15.6		32.4	14.3	
Level of Service	D	B		E	B		F	B		C	B	
Approach Delay (s)		16.9			24.4			24.5			17.1	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	152	26	116	99	286	28	349	229	71	268	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.89		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1822		1770	1655		1770	3329		1770	3486	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1822		1770	1655		1770	3329		1770	3486	
Peak-hour factor, PHF	0.79	0.79	0.79	0.86	0.86	0.86	0.94	0.94	0.94	0.77	0.77	0.77
Adj. Flow (vph)	18	192	33	135	115	333	30	371	244	92	348	39
RTOR Reduction (vph)	0	10	0	0	159	0	0	171	0	0	12	0
Lane Group Flow (vph)	18	215	0	135	289	0	30	444	0	92	375	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.6	15.3		5.2	19.9		1.4	15.0		4.1	17.7	
Effective Green, g (s)	0.6	15.3		5.2	19.9		1.4	15.0		4.1	17.7	
Actuated g/C Ratio	0.01	0.28		0.09	0.36		0.03	0.27		0.07	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	19	501		166	592		45	898		131	1110	
v/s Ratio Prot	0.01	0.12		c0.08	c0.17		0.02	c0.13		c0.05	c0.11	
v/s Ratio Perm												
v/c Ratio	0.95	0.43		0.81	0.49		0.67	0.49		0.70	0.34	
Uniform Delay, d1	27.5	16.6		24.7	13.9		26.9	17.1		25.2	14.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	179.6	0.6		25.3	0.6		31.5	0.4		15.7	0.2	
Delay (s)	207.1	17.2		50.0	14.5		58.3	17.5		40.8	14.7	
Level of Service	F	B		D	B		E	B		D	B	
Approach Delay (s)		31.2			22.7			19.4			19.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	162	11	42	10	14	21	33	1343	575	126	1133	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5		5.6		3.7	5.3	5.3	3.7	5.3	5.3
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583		1726		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1696	1583		1726		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.85	0.85	0.85	0.88	0.88	0.88
Adj. Flow (vph)	176	12	46	11	16	24	39	1580	676	143	1288	15
RTOR Reduction (vph)	0	0	41	0	23	0	0	0	150	0	0	2
Lane Group Flow (vph)	93	95	5	0	28	0	39	1580	526	143	1288	13
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	7	7		8	8		1	6		5	2	
Permitted Phases			7						6			2
Actuated Green, G (s)	13.5	13.5	13.5		6.8		6.0	61.5	61.5	13.7	69.2	69.2
Effective Green, g (s)	13.5	13.5	13.5		6.8		6.0	61.5	61.5	13.7	69.2	69.2
Actuated g/C Ratio	0.12	0.12	0.12		0.06		0.05	0.53	0.53	0.12	0.60	0.60
Clearance Time (s)	5.5	5.5	5.5		5.6		3.7	5.3	5.3	3.7	5.3	5.3
Vehicle Extension (s)	4.5	4.5	4.5		3.0		2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	196	198	185		102		92	1883	842	210	2119	948
v/s Ratio Prot	0.06	c0.06			c0.02		0.02	c0.45		c0.08	0.36	
v/s Ratio Perm			0.00						0.33			0.01
v/c Ratio	0.47	0.48	0.03		0.28		0.42	0.84	0.62	0.68	0.61	0.01
Uniform Delay, d1	47.7	47.8	45.2		52.1		53.1	22.9	19.0	48.9	14.6	9.4
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	3.1	0.1		1.5		1.1	3.8	2.0	7.0	0.7	0.0
Delay (s)	50.8	50.9	45.4		53.5		54.3	26.7	21.0	55.9	15.4	9.4
Level of Service	D	D	D		D		D	C	C	E	B	A
Approach Delay (s)		49.8			53.5			25.5			19.3	
Approach LOS		D			D			C			B	

Intersection Summary

HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	115.6	Sum of lost time (s)	20.1
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	515	20	87	24	23	25	17	1221	310	149	1481	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5		5.6		3.7	5.3	5.3	3.7	5.3	5.3
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1691	1583		1747		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1691	1583		1747		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.64	0.64	0.64	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	592	23	100	38	36	39	18	1313	333	173	1722	6
RTOR Reduction (vph)	0	0	78	0	14	0	0	0	104	0	0	0
Lane Group Flow (vph)	308	307	22	0	99	0	18	1313	229	173	1722	6
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	7	7		8	8		1	6		5	2	
Permitted Phases			7						6			2
Actuated Green, G (s)	24.6	24.6	24.6		13.1		2.8	62.4	62.4	17.5	77.1	77.1
Effective Green, g (s)	24.6	24.6	24.6		13.1		2.8	62.4	62.4	17.5	77.1	77.1
Actuated g/C Ratio	0.18	0.18	0.18		0.10		0.02	0.45	0.45	0.13	0.56	0.56
Clearance Time (s)	5.5	5.5	5.5		5.6		3.7	5.3	5.3	3.7	5.3	5.3
Vehicle Extension (s)	4.5	4.5	4.5		3.0		2.0	4.9	4.9	2.0	4.9	4.9
Lane Grp Cap (vph)	300	302	283		166		36	1604	717	225	1982	886
v/s Ratio Prot	c0.18	0.18			c0.06		0.01	0.37		c0.10	c0.49	
v/s Ratio Perm			0.01						0.14			0.00
v/c Ratio	1.03	1.02	0.08		0.60		0.50	0.82	0.32	0.77	0.87	0.01
Uniform Delay, d1	56.5	56.5	47.1		59.8		66.8	32.7	24.1	58.1	26.0	13.4
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	59.0	56.1	0.2		5.7		3.9	3.8	0.5	13.2	4.7	0.0
Delay (s)	115.5	112.6	47.3		65.5		70.7	36.5	24.6	71.4	30.7	13.4
Level of Service	F	F	D		E		E	D	C	E	C	B
Approach Delay (s)		104.7			65.5			34.5			34.3	
Approach LOS		F			E			C			C	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	137.7	Sum of lost time (s)	20.1
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	215	0	52	0	273	0	0	102	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.87	0.87	0.87	0.45	0.45	0.45
Hourly flow rate (vph)	0	0	0	253	0	61	0	314	0	0	227	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								857				
pX, platoon unblocked												
vC, conflicting volume	445	540	113	427	540	157	227			314		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	445	540	113	427	540	157	227			314		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	51	100	93	100			100		
cM capacity (veh/h)	462	447	918	511	447	861	1339			1243		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	169	145	157	157	151	76
Volume Left	169	84	0	0	0	0
Volume Right	0	61	0	0	0	0
cSH	511	617	1700	1700	1700	1700
Volume to Capacity	0.33	0.24	0.09	0.09	0.09	0.04
Queue Length 95th (ft)	36	23	0	0	0	0
Control Delay (s)	15.5	12.6	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	14.2		0.0		0.0	
Approach LOS	B					

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	21.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	88	4	42	0	516	0	0	174	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.83	0.83	0.83	0.89	0.89	0.89	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	106	5	51	0	580	0	0	252	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								857				
pX, platoon unblocked												
vC, conflicting volume	598	835	129	706	838	290	258			580		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	835	129	706	838	290	258			580		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	67	98	93	100			100		
cM capacity (veh/h)	354	302	897	323	301	707	1304			990		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	71	91	290	290	168	90
Volume Left	71	35	0	0	0	0
Volume Right	0	51	0	0	0	6
cSH	323	461	1700	1700	1700	1700
Volume to Capacity	0.22	0.20	0.17	0.17	0.10	0.05
Queue Length 95th (ft)	20	18	0	0	0	0
Control Delay (s)	19.2	14.7	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.7		0.0		0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1	8	304	1	39	31	432	481	100	703	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		4.5	4.5	4.5	4.0	5.0	5.0	4.0	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1643		1681	1686	1583	1770	3539	1583	1770	3538	
Flt Permitted		1.00		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1643		1681	1686	1583	1770	3539	1583	1770	3538	
Peak-hour factor, PHF	0.38	0.38	0.38	0.78	0.78	0.78	0.85	0.85	0.85	0.69	0.69	0.69
Adj. Flow (vph)	0	3	21	390	1	50	36	508	566	145	1019	3
RTOR Reduction (vph)	0	20	0	0	0	40	0	0	368	0	0	0
Lane Group Flow (vph)	0	4	0	195	196	10	36	508	198	145	1022	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		1.8		14.2	14.2	14.2	3.1	24.4	24.4	10.8	32.1	
Effective Green, g (s)		1.8		14.2	14.2	14.2	3.1	24.4	24.4	10.8	32.1	
Actuated g/C Ratio		0.03		0.20	0.20	0.20	0.04	0.35	0.35	0.15	0.46	
Clearance Time (s)		5.0		4.5	4.5	4.5	4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)		2.0		1.5	1.5	1.5	1.0	2.0	2.0	1.0	2.0	
Lane Grp Cap (vph)		42		342	343	323	79	1239	554	274	1629	
v/s Ratio Prot		c0.00		0.12	c0.12		0.02	0.14		c0.08	c0.29	
v/s Ratio Perm						0.01			0.13			
v/c Ratio		0.08		0.57	0.57	0.03	0.46	0.41	0.36	0.53	0.63	
Uniform Delay, d1		33.1		25.0	25.0	22.2	32.5	17.2	16.8	27.1	14.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3		1.4	1.4	0.0	1.5	0.1	0.1	0.9	0.5	
Delay (s)		33.5		26.4	26.4	22.3	34.0	17.3	17.0	28.0	14.8	
Level of Service		C		C	C	C	C	B	B	C	B	
Approach Delay (s)		33.5			26.0			17.7			16.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	8	24	528	4	69	21	689	234	62	520	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		4.5	4.5	4.5	4.0	5.0	5.0	4.0	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1691		1681	1687	1583	1770	3539	1583	1770	3535	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1691		1681	1687	1583	1770	3539	1583	1770	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.83	0.83	0.83	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	8	10	30	636	5	83	25	830	282	74	619	5
RTOR Reduction (vph)	0	28	0	0	0	56	0	0	120	0	1	0
Lane Group Flow (vph)	0	20	0	318	323	27	25	830	162	74	623	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		4.6		26.9	26.9	26.9	2.1	28.3	28.3	6.2	32.4	
Effective Green, g (s)		4.6		26.9	26.9	26.9	2.1	28.3	28.3	6.2	32.4	
Actuated g/C Ratio		0.05		0.32	0.32	0.32	0.02	0.33	0.33	0.07	0.38	
Clearance Time (s)		5.0		4.5	4.5	4.5	4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)		2.0		1.5	1.5	1.5	1.0	2.0	2.0	1.0	2.0	
Lane Grp Cap (vph)		92		535	537	504	44	1185	530	130	1355	
v/s Ratio Prot		c0.01		0.19	c0.19		0.01	c0.23		c0.04	0.18	
v/s Ratio Perm						0.02			0.10			
v/c Ratio		0.21		0.59	0.60	0.05	0.57	0.70	0.30	0.57	0.46	
Uniform Delay, d1		38.2		24.2	24.3	20.0	40.8	24.4	20.8	37.9	19.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.4		1.2	1.3	0.0	9.6	1.5	0.1	3.4	0.1	
Delay (s)		38.6		25.4	25.6	20.0	50.4	26.0	20.9	41.2	19.6	
Level of Service		D		C	C	B	D	C	C	D	B	
Approach Delay (s)		38.6			24.9			25.3			21.9	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	109	108	95	155	39	355	674	73	87	759	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.0	4.0	4.0	4.6		4.0	4.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5011		1770	5037	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5011		1770	5037	
Peak-hour factor, PHF	0.93	0.93	0.93	0.66	0.66	0.66	0.71	0.71	0.71	0.69	0.69	0.69
Adj. Flow (vph)	40	117	116	144	235	59	500	949	103	126	1100	75
RTOR Reduction (vph)	0	0	98	0	0	46	0	7	0	0	4	0
Lane Group Flow (vph)	40	117	18	144	235	13	500	1045	0	126	1171	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	6.1	18.0	18.0	13.9	26.4	26.4	26.1	55.4		12.8	42.1	
Effective Green, g (s)	6.1	18.0	18.0	13.9	26.4	26.4	26.1	55.4		12.8	42.1	
Actuated g/C Ratio	0.05	0.15	0.15	0.12	0.23	0.23	0.22	0.47		0.11	0.36	
Clearance Time (s)	4.0	4.6	4.6	4.0	4.0	4.0	4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	2.5	2.5	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	92	543	243	210	797	356	394	2367		193	1808	
v/s Ratio Prot	0.02	0.03		c0.08	c0.07		c0.28	0.21		0.07	c0.23	
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.43	0.22	0.07	0.69	0.29	0.04	1.27	0.44		0.65	0.65	
Uniform Delay, d1	53.9	43.5	42.5	49.6	37.7	35.5	45.6	20.6		50.1	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.4	0.3	7.2	0.2	0.0	139.7	0.3		5.9	1.1	
Delay (s)	55.1	43.9	42.8	56.8	37.9	35.6	185.3	20.9		56.0	32.5	
Level of Service	E	D	D	E	D	D	F	C		E	C	
Approach Delay (s)		45.1			43.8			73.9			34.8	
Approach LOS		D			D			E			C	

Intersection Summary

HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	117.3	Sum of lost time (s)	12.6
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	239	257	162	125	72	149	682	155	101	488	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.0	4.0	4.0	4.6		4.0	4.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	4944		1770	5042	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	4944		1770	5042	
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94
Adj. Flow (vph)	125	337	362	176	136	78	155	710	161	107	519	31
RTOR Reduction (vph)	0	0	278	0	0	57	0	24	0	0	4	0
Lane Group Flow (vph)	125	337	84	176	136	21	155	847	0	107	546	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	12.2	22.6	22.6	15.1	26.1	26.1	13.9	30.9		11.1	28.1	
Effective Green, g (s)	12.2	22.6	22.6	15.1	26.1	26.1	13.9	30.9		11.1	28.1	
Actuated g/C Ratio	0.13	0.23	0.23	0.16	0.27	0.27	0.14	0.32		0.11	0.29	
Clearance Time (s)	4.0	4.6	4.6	4.0	4.0	4.0	4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	2.5	2.5	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	223	825	369	276	953	426	254	1577		203	1462	
v/s Ratio Prot	0.07	c0.10		c0.10	c0.04		c0.09	c0.17		0.06	0.11	
v/s Ratio Perm			0.05			0.01						
v/c Ratio	0.56	0.41	0.23	0.64	0.14	0.05	0.61	0.54		0.53	0.37	
Uniform Delay, d1	39.8	31.5	30.1	38.3	26.9	26.2	39.0	27.1		40.4	27.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.7	0.7	3.5	0.1	0.0	3.0	0.6		1.1	0.3	
Delay (s)	41.7	32.2	30.8	41.9	26.9	26.2	42.0	27.8		41.6	27.7	
Level of Service	D	C	C	D	C	C	D	C		D	C	
Approach Delay (s)		33.0			33.5			29.9			30.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	21.2
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	242	131	0	241	146	189	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	0.97	0.91		0.95		1.00	0.95
Frt	0.99	0.85		0.94		1.00	1.00
Flt Protected	0.96	1.00		1.00		0.95	1.00
Satd. Flow (prot)	3420	1441		3339		1770	3539
Flt Permitted	0.96	1.00		1.00		0.50	1.00
Satd. Flow (perm)	3420	1441		3339		930	3539
Peak-hour factor, PHF	0.78	0.78	0.89	0.89	0.89	0.88	0.88
Adj. Flow (vph)	310	168	0	271	164	215	602
RTOR Reduction (vph)	11	106	0	88	0	0	0
Lane Group Flow (vph)	319	42	0	347	0	215	602
Turn Type		Perm	Perm			Perm	
Protected Phases	8			2			6
Permitted Phases		8	2			6	
Actuated Green, G (s)	8.9	8.9		14.7		14.7	14.7
Effective Green, g (s)	8.9	8.9		14.7		14.7	14.7
Actuated g/C Ratio	0.28	0.28		0.47		0.47	0.47
Clearance Time (s)	4.0	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	963	406		1553		433	1646
v/s Ratio Prot	c0.09			0.10			0.17
v/s Ratio Perm		0.03				c0.23	
v/c Ratio	0.33	0.10		0.22		0.50	0.37
Uniform Delay, d1	9.0	8.4		5.0		5.9	5.4
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1		0.1		0.9	0.1
Delay (s)	9.2	8.5		5.1		6.8	5.6
Level of Service	A	A		A		A	A
Approach Delay (s)	9.0			5.1			5.9
Approach LOS	A			A			A

Intersection Summary

HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	31.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	146	274	0	561	180	232	408
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	0.97	0.91		0.95		1.00	0.95
Frt	0.93	0.85		0.96		1.00	1.00
Flt Protected	0.97	1.00		1.00		0.95	1.00
Satd. Flow (prot)	3267	1441		3410		1770	3539
Flt Permitted	0.97	1.00		1.00		0.24	1.00
Satd. Flow (perm)	3267	1441		3410		445	3539
Peak-hour factor, PHF	0.84	0.84	0.71	0.71	0.71	0.96	0.96
Adj. Flow (vph)	174	326	0	790	254	242	425
RTOR Reduction (vph)	87	87	0	41	0	0	0
Lane Group Flow (vph)	250	76	0	1003	0	242	425
Turn Type		Perm	Perm			Perm	
Protected Phases	8			2			6
Permitted Phases		8	2			6	
Actuated Green, G (s)	8.5	8.5		25.1		25.1	25.1
Effective Green, g (s)	8.5	8.5		25.1		25.1	25.1
Actuated g/C Ratio	0.20	0.20		0.60		0.60	0.60
Clearance Time (s)	4.0	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	668	294		2057		268	2135
v/s Ratio Prot	c0.08			0.29			0.12
v/s Ratio Perm		0.05				c0.54	
v/c Ratio	0.37	0.26		0.49		0.90	0.20
Uniform Delay, d1	14.3	13.9		4.6		7.2	3.7
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.4	0.5		0.2		30.8	0.0
Delay (s)	14.6	14.4		4.8		38.0	3.8
Level of Service	B	B		A		D	A
Approach Delay (s)	14.5			4.8			16.2
Approach LOS	B			A			B

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	41.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	117	66	241	235	120	103	503	129	159	561	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.95		1.00	0.95		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3348		1770	3360		1770	4929		1770	4954	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3348		1770	3360		1770	4929		1770	4954	
Peak-hour factor, PHF	0.73	0.73	0.73	0.74	0.74	0.74	0.67	0.67	0.67	0.76	0.76	0.76
Adj. Flow (vph)	145	160	90	326	318	162	154	751	193	209	738	153
RTOR Reduction (vph)	0	77	0	0	68	0	0	44	0	0	30	0
Lane Group Flow (vph)	145	173	0	326	412	0	154	900	0	209	861	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.7	11.6		18.3	18.2		10.7	22.6		11.2	23.1	
Effective Green, g (s)	11.7	11.6		18.3	18.2		10.7	22.6		11.2	23.1	
Actuated g/C Ratio	0.15	0.15		0.23	0.23		0.13	0.28		0.14	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	487		406	767		238	1398		249	1436	
v/s Ratio Prot	0.08	0.05		c0.18	c0.12		0.09	c0.18		c0.12	0.17	
v/s Ratio Perm												
v/c Ratio	0.56	0.36		0.80	0.54		0.65	0.64		0.84	0.60	
Uniform Delay, d1	31.6	30.7		29.0	27.0		32.7	25.0		33.4	24.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.4		10.9	0.7		5.9	1.0		21.3	0.7	
Delay (s)	34.2	31.1		39.9	27.8		38.6	26.1		54.6	25.0	
Level of Service	C	C		D	C		D	C		D	C	
Approach Delay (s)		32.2			32.7			27.8			30.6	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	205	108	82	140	82	121	549	92	152	365	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.95		1.00	0.94		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3356		1770	3343		1770	4976		1770	4975	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3356		1770	3343		1770	4976		1770	4975	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.82	0.82	0.82	0.50	0.50	0.50
Adj. Flow (vph)	160	247	130	99	169	99	148	670	112	304	730	124
RTOR Reduction (vph)	0	73	0	0	84	0	0	22	0	0	22	0
Lane Group Flow (vph)	160	304	0	99	184	0	148	760	0	304	832	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.6	14.4		7.9	10.7		10.5	19.0		11.3	19.8	
Effective Green, g (s)	11.6	14.4		7.9	10.7		10.5	19.0		11.3	19.8	
Actuated g/C Ratio	0.17	0.21		0.12	0.16		0.15	0.28		0.16	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	299	704		204	521		271	1378		292	1436	
v/s Ratio Prot	c0.09	c0.09		0.06	0.06		0.08	0.15		c0.17	c0.17	
v/s Ratio Perm												
v/c Ratio	0.54	0.43		0.49	0.35		0.55	0.55		1.04	0.58	
Uniform Delay, d1	26.0	23.5		28.4	25.9		26.8	21.2		28.6	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.4		1.8	0.4		2.2	0.5		63.8	0.6	
Delay (s)	27.9	24.0		30.3	26.3		29.1	21.6		92.4	21.4	
Level of Service	C	C		C	C		C	C		F	C	
Approach Delay (s)		25.1			27.4			22.8			40.1	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Right Turn Channelized												
Volume (veh/h)	18	97	90	42	23	46	21	78	58	86	37	45
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.84	0.84	0.84	0.84	0.84	0.87	0.87
Hourly flow rate (vph)	22	120	111	52	28	55	25	93	69	102	43	52
Approach Volume (veh/h)			333					344				
Crossing Volume (veh/h)			934					909				
High Capacity (veh/h)			657					670				
High v/c (veh/h)			0.51					0.51				
Low Capacity (veh/h)			513					524				
Low v/c (veh/h)			0.65					0.66				

Intersection Summary

Maximum v/c High	0.83				
Maximum v/c Low	1.01				
Intersection Capacity Utilization	109.3%	ICU Level of Service		H	

Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	SEL2	SEL	SET	SER
Right Turn Channelized												
Volume (veh/h)	352	53	5	11	48	377	231	182	239	37	6	82
Peak Hour Factor	0.87	0.87	0.87	0.98	0.98	0.98	0.98	0.98	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	405	61	6	11	49	385	236	186	269	42	7	92
Approach Volume (veh/h)	566					866					413	
Crossing Volume (veh/h)	737					358					896	
High Capacity (veh/h)	772					1045					678	
High v/c (veh/h)	0.73					0.83					0.61	
Low Capacity (veh/h)	612					854					530	
Low v/c (veh/h)	0.92					1.01					0.78	

Intersection Summary

Movement	SER2
Right Turn Channelized	
Volume (veh/h)	4
Peak Hour Factor	0.89
Hourly flow rate (vph)	4
Approach Volume (veh/h)	
Crossing Volume (veh/h)	
High Capacity (veh/h)	
High v/c (veh/h)	
Low Capacity (veh/h)	
Low v/c (veh/h)	

Intersection Summary

Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Right Turn Channelized												
Volume (veh/h)	50	150	68	51	27	48	35	104	52	109	73	118
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.86	0.86	0.92	0.92
Hourly flow rate (vph)	53	158	72	54	28	56	41	121	60	127	79	128
Approach Volume (veh/h)			364					405				
Crossing Volume (veh/h)			1177					1144				
High Capacity (veh/h)			538					553				
High v/c (veh/h)			0.68					0.73				
Low Capacity (veh/h)			410					423				
Low v/c (veh/h)			0.89					0.96				

Intersection Summary

Maximum v/c High	1.48			
Maximum v/c Low	1.84			
Intersection Capacity Utilization	Err%	ICU Level of Service	H	

Crossing flow exceeds 1200, method is not applicable

Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	SEL2	SEL	SET	SER
Right Turn Channelized												
Volume (veh/h)	479	44	11	10	63	559	253	311	197	20	3	136
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	521	48	12	11	71	628	284	349	205	21	3	142
Approach Volume (veh/h)	788					1344					523	
Crossing Volume (veh/h)	703					538					1291#	
High Capacity (veh/h)	793					905					489	
High v/c (veh/h)	0.99					1.48					1.07	
Low Capacity (veh/h)	631					730					370	
Low v/c (veh/h)	1.25					1.84					1.41	

Intersection Summary

Movement	SER2
Right Turn Channelized	
Volume (veh/h)	146
Peak Hour Factor	0.96
Hourly flow rate (vph)	152
Approach Volume (veh/h)	
Crossing Volume (veh/h)	
High Capacity (veh/h)	
High v/c (veh/h)	
Low Capacity (veh/h)	
Low v/c (veh/h)	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	939	11	18	526	14	7	5	3	17	12	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5076		1770	5065		1770	1761		1770	1686	
Flt Permitted	0.43	1.00		0.24	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	792	5076		446	5065		1863	1761		1863	1686	
Peak-hour factor, PHF	0.69	0.69	0.69	0.94	0.94	0.94	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	48	1361	16	19	560	15	9	7	4	26	18	31
RTOR Reduction (vph)	0	2	0	0	4	0	0	4	0	0	29	0
Lane Group Flow (vph)	48	1375	0	19	571	0	9	7	0	26	20	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		2.0	2.0		2.0	2.0	
Effective Green, g (s)	16.7	16.7		16.7	16.7		2.0	2.0		2.0	2.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63		0.07	0.07		0.07	0.07	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	495	3175		279	3168		140	132		140	126	
v/s Ratio Prot		c0.27			0.11			0.00			0.01	
v/s Ratio Perm	0.06			0.04			0.00			c0.01		
v/c Ratio	0.10	0.43		0.07	0.18		0.06	0.06		0.19	0.16	
Uniform Delay, d1	2.0	2.6		2.0	2.1		11.5	11.5		11.6	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.0		0.2	0.2		0.6	0.6	
Delay (s)	2.1	2.7		2.1	2.1		11.7	11.6		12.2	12.2	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		2.6			2.1			11.7			12.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	2.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	26.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	915	12	18	1236	24	8	40	14	15	23	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5075		1770	5071		1770	1791		1770	1704	
Flt Permitted	0.22	1.00		0.27	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	403	5075		507	5071		1863	1791		1863	1704	
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	67	995	13	25	1717	33	10	49	17	17	26	34
RTOR Reduction (vph)	0	2	0	0	3	0	0	16	0	0	3	0
Lane Group Flow (vph)	67	1006	0	25	1747	0	10	50	0	17	57	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.5	18.5		18.5	18.5		2.4	2.4		2.4	2.4	
Effective Green, g (s)	18.5	18.5		18.5	18.5		2.4	2.4		2.4	2.4	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.08	0.08		0.08	0.08	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	3249		325	3246		155	149		155	142	
v/s Ratio Prot		0.20			c0.34			0.03			c0.03	
v/s Ratio Perm	0.17			0.05			0.01			0.01		
v/c Ratio	0.26	0.31		0.08	0.54		0.06	0.34		0.11	0.40	
Uniform Delay, d1	2.2	2.3		2.0	2.9		12.2	12.5		12.3	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		0.1	0.2		0.2	1.4		0.3	1.9	
Delay (s)	2.8	2.4		2.1	3.0		12.4	13.9		12.6	14.4	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		2.4			3.0			13.7			14.0	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	3.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	28.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Hayden Ct & Union Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	0	2	133	0	18	11	1320	104	154	896	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1794		1681	1905	1583	1770	5030		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1794		1681	1905	1583	1770	5030		1770	5085	1583
Peak-hour factor, PHF	0.25	0.25	0.25	0.67	0.67	0.67	0.76	0.76	0.76	0.73	0.73	0.73
Adj. Flow (vph)	116	0	8	199	0	27	14	1737	137	211	1227	100
RTOR Reduction (vph)	0	7	0	0	0	23	0	7	0	0	0	23
Lane Group Flow (vph)	116	1	0	99	100	4	14	1867	0	211	1227	77
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	13.7	13.7		13.3	13.3	13.3	1.2	33.7		14.8	47.3	47.3
Effective Green, g (s)	13.7	13.7		13.3	13.3	13.3	1.2	33.7		14.8	47.3	47.3
Actuated g/C Ratio	0.15	0.15		0.14	0.14	0.14	0.01	0.37		0.16	0.51	0.51
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	264	267		243	275	229	23	1843		285	2614	814
v/s Ratio Prot	c0.07	0.00		c0.06	0.05		0.01	c0.37		c0.12	0.24	
v/s Ratio Perm						0.00						0.05
v/c Ratio	0.44	0.00		0.41	0.36	0.02	0.61	1.01		0.74	0.47	0.09
Uniform Delay, d1	35.7	33.3		35.8	35.5	33.7	45.2	29.1		36.8	14.3	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	0.0		2.7	2.0	0.1	27.4	24.2		8.7	0.3	0.1
Delay (s)	38.5	33.4		38.5	37.5	33.8	72.6	53.4		45.5	14.6	11.5
Level of Service	D	C		D	D	C	E	D		D	B	B
Approach Delay (s)		38.2			37.5			53.5			18.6	
Approach LOS		D			D			D			B	

Intersection Summary

HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Hayden Ct & Union Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	7	29	225	7	104	43	1209	10	35	1357	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1856		1681	1916	1583	1770	5079		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1856		1681	1916	1583	1770	5079		1770	5085	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.81	0.81	0.81	0.97	0.97	0.97	0.83	0.83	0.83
Adj. Flow (vph)	111	9	37	278	9	128	44	1246	10	42	1635	46
RTOR Reduction (vph)	0	32	0	0	0	102	0	1	0	0	0	10
Lane Group Flow (vph)	111	14	0	145	142	26	44	1255	0	42	1635	36
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	10.3	10.3		16.2	16.2	16.2	4.0	32.1		4.0	32.1	32.1
Effective Green, g (s)	10.3	10.3		16.2	16.2	16.2	4.0	32.1		4.0	32.1	32.1
Actuated g/C Ratio	0.13	0.13		0.20	0.20	0.20	0.05	0.41		0.05	0.41	0.41
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	230	242		344	392	324	90	2061		90	2064	642
v/s Ratio Prot	c0.06	0.01		c0.09	0.07		c0.02	0.25		0.02	c0.32	
v/s Ratio Perm						0.02						0.02
v/c Ratio	0.48	0.06		0.42	0.36	0.08	0.49	0.61		0.47	0.79	0.06
Uniform Delay, d1	31.9	30.1		27.4	27.0	25.4	36.6	18.5		36.5	20.6	14.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	0.2		2.0	1.4	0.3	1.5	0.8		1.4	2.5	0.1
Delay (s)	35.8	30.4		29.4	28.4	25.7	38.1	19.3		37.9	23.1	14.4
Level of Service	D	C		C	C	C	D	B		D	C	B
Approach Delay (s)		34.2			27.9			20.0			23.2	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

BAKERSFIELD HYBRID ALTERNATIVE EXISTING PLUS PROJECT CONDITIONS

HCM Signalized Intersection Capacity Analysis
23: California Ave & Union Ave

6/15/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	280	61	160	288	145	93	1256	143	165	754	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4949		3433	4830		1770	5007		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	4949		3433	4830		1770	5007		1770	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.80	0.80	0.80	0.76	0.76	0.76
Adj. Flow (vph)	241	346	75	178	320	161	116	1570	179	217	992	253
RTOR Reduction (vph)	0	26	0	0	71	0	0	9	0	0	0	103
Lane Group Flow (vph)	241	395	0	178	410	0	116	1740	0	217	992	150
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	11.7	19.8		9.8	17.9		11.3	36.1		17.0	41.8	41.8
Effective Green, g (s)	11.7	19.8		9.8	17.9		11.3	36.1		17.0	41.8	41.8
Actuated g/C Ratio	0.12	0.20		0.10	0.18		0.11	0.36		0.17	0.42	0.42
Clearance Time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Vehicle Extension (s)	2.0	5.2		2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	400	976		335	861		199	1800		300	2117	659
v/s Ratio Prot	c0.07	0.08		0.05	c0.08		0.07	c0.35		c0.12	0.20	
v/s Ratio Perm												0.09
v/c Ratio	0.60	0.40		0.53	0.48		0.58	0.97		0.72	0.47	0.23
Uniform Delay, d1	42.1	35.2		43.1	37.0		42.3	31.6		39.5	21.2	18.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.6		0.8	0.9		2.8	14.3		7.1	0.4	0.4
Delay (s)	43.9	35.8		43.9	38.0		45.1	45.9		46.6	21.6	19.3
Level of Service	D	D		D	D		D	D		D	C	B
Approach Delay (s)		38.7			39.6			45.8			24.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.4	Sum of lost time (s)	17.7
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: California Ave & Union Ave

6/15/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	343	106	311	421	136	114	938	115	198	1276	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4905		3433	4899		1770	5002		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	4905		3433	4899		1770	5002		1770	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.91	0.91	0.91	0.79	0.79	0.79
Adj. Flow (vph)	295	423	131	362	490	158	125	1031	126	251	1615	386
RTOR Reduction (vph)	0	43	0	0	44	0	0	10	0	0	0	102
Lane Group Flow (vph)	295	511	0	362	604	0	125	1147	0	251	1615	284
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	14.4	22.4		16.5	24.5		12.6	35.3		20.0	42.7	42.7
Effective Green, g (s)	14.4	22.4		16.5	24.5		12.6	35.3		20.0	42.7	42.7
Actuated g/C Ratio	0.13	0.20		0.15	0.22		0.11	0.32		0.18	0.38	0.38
Clearance Time (s)	5.2	4.4		5.2	4.4		3.7	4.4		3.7	4.4	4.4
Vehicle Extension (s)	2.0	5.2		2.0	5.2		2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	442	982		506	1073		199	1578		316	1940	604
v/s Ratio Prot	0.09	0.10		c0.11	c0.12		0.07	c0.23		0.14	c0.32	
v/s Ratio Perm												0.18
v/c Ratio	0.67	0.52		0.72	0.56		0.63	0.73		0.79	0.83	0.47
Uniform Delay, d1	46.5	40.0		45.5	38.9		47.4	34.0		44.0	31.4	26.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	1.0		4.0	1.2		4.4	2.1		12.1	3.6	1.3
Delay (s)	49.4	41.0		49.5	40.1		51.8	36.2		56.0	35.0	27.4
Level of Service	D	D		D	D		D	D		E	C	C
Approach Delay (s)		43.9			43.5			37.7			36.0	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	39.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	0	9	192	0	52	26	1320	244	232	896	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.85		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1794		1681	1905	1583	1770	4966		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1794		1681	1905	1583	1770	4966		1770	5085	1583
Peak-hour factor, PHF	0.25	0.25	0.25	0.67	0.67	0.67	0.76	0.76	0.76	0.73	0.73	0.73
Adj. Flow (vph)	16	0	36	287	0	78	34	1737	321	318	1227	18
RTOR Reduction (vph)	0	34	0	0	0	64	0	20	0	0	0	4
Lane Group Flow (vph)	16	2	0	143	144	14	34	2038	0	318	1227	14
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	5.2	5.2		16.3	16.3	16.3	4.0	32.5		20.7	49.2	49.2
Effective Green, g (s)	5.2	5.2		16.3	16.3	16.3	4.0	32.5		20.7	49.2	49.2
Actuated g/C Ratio	0.06	0.06		0.18	0.18	0.18	0.04	0.36		0.23	0.54	0.54
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	101	102		300	340	283	78	1770		402	2743	854
v/s Ratio Prot	c0.01	0.00		c0.09	0.08		0.02	c0.41		c0.18	0.24	
v/s Ratio Perm						0.01						0.01
v/c Ratio	0.16	0.02		0.48	0.42	0.05	0.44	1.15		0.79	0.45	0.02
Uniform Delay, d1	40.9	40.6		33.6	33.3	31.0	42.5	29.4		33.2	12.7	9.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2		2.9	2.1	0.2	1.4	75.2		9.5	0.3	0.0
Delay (s)	42.7	40.8		36.5	35.4	31.2	43.9	104.5		42.8	13.0	9.8
Level of Service	D	D		D	D	C	D	F		D	B	A
Approach Delay (s)		41.4			34.9			103.5			19.0	
Approach LOS		D			C			F			B	

Intersection Summary

HCM Average Control Delay	64.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	7	44	365	7	182	50	1209	69	69	1357	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
Total Lost time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.87		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1838		1681	1914	1583	1770	5044		1770	5085	1583
Flt Permitted	0.95	1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1838		1681	1914	1583	1770	5044		1770	5085	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.81	0.81	0.81	0.97	0.97	0.97	0.83	0.83	0.83
Adj. Flow (vph)	35	9	56	451	9	225	52	1246	71	83	1635	16
RTOR Reduction (vph)	0	51	0	0	0	148	0	4	0	0	0	4
Lane Group Flow (vph)	35	14	0	230	230	77	52	1313	0	83	1635	12
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	7	7		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	7.5	7.5		21.1	21.1	21.1	4.5	32.5		6.9	34.9	34.9
Effective Green, g (s)	7.5	7.5		21.1	21.1	21.1	4.5	32.5		6.9	34.9	34.9
Actuated g/C Ratio	0.09	0.09		0.25	0.25	0.25	0.05	0.38		0.08	0.41	0.41
Clearance Time (s)	3.7	3.7		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Vehicle Extension (s)	5.5	5.5		5.5	5.5	5.5	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)	157	163		420	478	395	94	1940		145	2100	654
v/s Ratio Prot	c0.02	0.01		c0.14	0.12		0.03	0.26		c0.05	c0.32	
v/s Ratio Perm						0.05						0.01
v/c Ratio	0.22	0.09		0.55	0.48	0.20	0.55	0.68		0.57	0.78	0.02
Uniform Delay, d1	35.8	35.4		27.6	27.0	25.0	39.0	21.6		37.4	21.5	14.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.6		2.9	1.9	0.6	4.0	1.3		3.4	2.2	0.0
Delay (s)	37.6	35.9		30.5	28.9	25.6	43.0	22.9		40.7	23.7	14.7
Level of Service	D	D		C	C	C	D	C		D	C	B
Approach Delay (s)		36.5			28.3			23.7			24.4	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	11.6
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	14	23	40	27	24	41	1038	44	53	1142	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.95			0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1734			1758		1770	5054		1770	5068	
Flt Permitted		0.89			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1565			1527		1770	5054		1770	5068	
Peak-hour factor, PHF	0.80	0.80	0.80	0.88	0.88	0.88	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	30	18	29	45	31	27	53	1331	56	68	1464	33
RTOR Reduction (vph)	0	25	0	0	18	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	52	0	0	85	0	53	1384	0	68	1495	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		6.7			6.7		3.7	30.6		4.0	30.9	
Effective Green, g (s)		6.7			6.7		3.7	30.6		4.0	30.9	
Actuated g/C Ratio		0.12			0.12		0.07	0.56		0.07	0.57	
Clearance Time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Vehicle Extension (s)		1.8			1.8		2.0	3.8		2.0	3.7	
Lane Grp Cap (vph)		192			188		120	2838		130	2873	
v/s Ratio Prot							0.03	0.27		c0.04	c0.30	
v/s Ratio Perm		0.03			c0.06							
v/c Ratio		0.27			0.45		0.44	0.49		0.52	0.52	
Uniform Delay, d1		21.7			22.2		24.4	7.2		24.3	7.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.6		0.9	0.2		1.7	0.2	
Delay (s)		22.0			22.8		25.4	7.4		26.1	7.5	
Level of Service		C			C		C	A		C	A	
Approach Delay (s)		22.0			22.8			8.0			8.3	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	8.3
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	53	64	79	38	48	65	1300	57	89	1250	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.95			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1748		1770	5053		1770	5054	
Flt Permitted		0.85			0.66		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1494			1186		1770	5053		1770	5054	
Peak-hour factor, PHF	0.69	0.69	0.69	0.94	0.94	0.94	0.90	0.90	0.90	0.81	0.81	0.81
Adj. Flow (vph)	74	77	93	84	40	51	72	1444	63	110	1543	67
RTOR Reduction (vph)	0	27	0	0	18	0	0	4	0	0	4	0
Lane Group Flow (vph)	0	217	0	0	157	0	72	1503	0	110	1606	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.7			13.7		5.9	29.8		7.1	31.0	
Effective Green, g (s)		13.7			13.7		5.9	29.8		7.1	31.0	
Actuated g/C Ratio		0.21			0.21		0.09	0.47		0.11	0.49	
Clearance Time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Vehicle Extension (s)		1.8			1.8		2.0	3.8		2.0	3.7	
Lane Grp Cap (vph)		321			255		164	2360		197	2456	
v/s Ratio Prot							0.04	0.30		c0.06	c0.32	
v/s Ratio Perm		c0.15			0.13							
v/c Ratio		0.68			0.62		0.44	0.64		0.56	0.65	
Uniform Delay, d1		23.0			22.7		27.4	12.9		26.9	12.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.4			3.1		0.7	0.6		1.9	0.7	
Delay (s)		27.4			25.8		28.1	13.5		28.8	13.0	
Level of Service		C			C		C	B		C	B	
Approach Delay (s)		27.4			25.8			14.2			14.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	8.3
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	13	14	42	15	28	35	1089	42	65	1091	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.96			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1752			1737		1770	5057		1770	5059	
Flt Permitted		0.84			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503			1444		1770	5057		1770	5059	
Peak-hour factor, PHF	0.77	0.77	0.77	0.69	0.69	0.69	0.81	0.81	0.81	0.78	0.78	0.78
Adj. Flow (vph)	29	17	18	61	22	41	43	1344	52	83	1399	49
RTOR Reduction (vph)	0	16	0	0	24	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	48	0	0	100	0	43	1393	0	83	1446	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		7.3			7.3		2.5	31.4		5.9	34.8	
Effective Green, g (s)		7.3			7.3		2.5	31.4		5.9	34.8	
Actuated g/C Ratio		0.13			0.13		0.04	0.54		0.10	0.60	
Clearance Time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Vehicle Extension (s)		1.8			2.2		2.0	3.4		2.0	4.2	
Lane Grp Cap (vph)		190			182		77	2747		181	3046	
v/s Ratio Prot							0.02	0.28		c0.05	c0.29	
v/s Ratio Perm		0.03			c0.07							
v/c Ratio		0.25			0.55		0.56	0.51		0.46	0.47	
Uniform Delay, d1		22.8			23.7		27.1	8.3		24.4	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			2.1		4.9	0.2		0.7	0.2	
Delay (s)		23.1			25.8		32.0	8.5		25.1	6.6	
Level of Service		C			C		C	A		C	A	
Approach Delay (s)		23.1			25.8			9.2			7.6	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	13.2
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	28	32	41	9	23	51	1316	20	36	1313	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.97			0.96		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756			1735		1770	5074		1770	5063	
Flt Permitted		0.80			0.76		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1455			1362		1770	5074		1770	5063	
Peak-hour factor, PHF	0.70	0.70	0.70	0.76	0.76	0.76	0.88	0.88	0.88	0.82	0.82	0.82
Adj. Flow (vph)	127	40	46	54	12	30	58	1495	23	44	1601	48
RTOR Reduction (vph)	0	12	0	0	20	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	201	0	0	76	0	58	1517	0	44	1647	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.0			13.0		4.2	32.3		3.9	32.0	
Effective Green, g (s)		13.0			13.0		4.2	32.3		3.9	32.0	
Actuated g/C Ratio		0.21			0.21		0.07	0.52		0.06	0.51	
Clearance Time (s)		4.6			4.6		3.7	4.9		3.7	4.9	
Vehicle Extension (s)		1.8			2.2		2.0	3.4		2.0	4.2	
Lane Grp Cap (vph)		303			284		119	2626		111	2596	
v/s Ratio Prot							c0.03	0.30		0.02	c0.33	
v/s Ratio Perm		c0.14			0.06							
v/c Ratio		0.66			0.27		0.49	0.58		0.40	0.63	
Uniform Delay, d1		22.7			20.7		28.1	10.4		28.1	11.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.2			0.3		1.1	0.3		0.8	0.6	
Delay (s)		26.9			21.0		29.2	10.7		29.0	11.6	
Level of Service		C			C		C	B		C	B	
Approach Delay (s)		26.9			21.0			11.4			12.0	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	13.2
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	319	3	79	475	18	0	0	34	0	0	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.85	0.85	0.85	0.70	0.70	0.70	0.50	0.50	0.50
Hourly flow rate (vph)	63	380	4	93	559	21	0	0	49	0	0	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	580			383			1017	1274	192	1120	1265	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	580			383			1017	1274	192	1120	1265	290
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			92			100	100	94	100	100	94
cM capacity (veh/h)	990			1172			161	143	818	136	145	707

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	63	253	130	93	373	207	49	44
Volume Left	63	0	0	93	0	0	0	0
Volume Right	0	0	4	0	0	21	49	44
cSH	990	1700	1700	1172	1700	1700	818	707
Volume to Capacity	0.06	0.15	0.08	0.08	0.22	0.12	0.06	0.06
Queue Length 95th (ft)	5	0	0	6	0	0	5	5
Control Delay (s)	8.9	0.0	0.0	8.3	0.0	0.0	9.7	10.4
Lane LOS	A			A			A	B
Approach Delay (s)	1.3			1.2			9.7	10.4
Approach LOS							A	B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	536	4	73	398	11	0	0	128	0	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.86	0.86	0.86	0.44	0.44	0.44	0.61	0.61	0.61
Hourly flow rate (vph)	19	715	5	85	463	13	0	0	291	0	0	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	476			720			1184	1400	360	1325	1396	238
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	476			720			1184	1400	360	1325	1396	238
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			90			100	100	54	100	100	96
cM capacity (veh/h)	1083			877			127	124	637	56	124	764

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	19	476	244	85	309	167	291	28
Volume Left	19	0	0	85	0	0	0	0
Volume Right	0	0	5	0	0	13	291	28
cSH	1083	1700	1700	877	1700	1700	637	764
Volume to Capacity	0.02	0.28	0.14	0.10	0.18	0.10	0.46	0.04
Queue Length 95th (ft)	1	0	0	8	0	0	60	3
Control Delay (s)	8.4	0.0	0.0	9.5	0.0	0.0	15.3	9.9
Lane LOS	A			A			C	A
Approach Delay (s)	0.2			1.4			15.3	9.9
Approach LOS							C	A

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	29.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	320	6	30	549	9	6	1	6	10	6	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.88	0.88	0.88	0.65	0.65	0.65	0.68	0.68	0.68
Hourly flow rate (vph)	34	405	8	34	624	10	9	2	9	15	9	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1065							
pX, platoon unblocked												
vC, conflicting volume	634			413			894	1179	139	911	1178	317
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	634			413			894	1179	139	911	1178	317
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			96	99	99	93	95	95
cM capacity (veh/h)	945			1143			205	177	884	214	177	679

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	34	162	162	89	34	416	218	20	56
Volume Left	34	0	0	0	34	0	0	9	15
Volume Right	0	0	0	8	0	0	10	9	32
cSH	945	1700	1700	1700	1143	1700	1700	312	336
Volume to Capacity	0.04	0.10	0.10	0.05	0.03	0.24	0.13	0.06	0.17
Queue Length 95th (ft)	3	0	0	0	2	0	0	5	15
Control Delay (s)	9.0	0.0	0.0	0.0	8.2	0.0	0.0	17.3	17.8
Lane LOS	A				A			C	C
Approach Delay (s)	0.7				0.4			17.3	17.8
Approach LOS								C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	635	8	37	436	2	28	7	65	7	6	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.93	0.93	0.93	0.39	0.39	0.39	0.79	0.79	0.79
Hourly flow rate (vph)	18	814	10	40	469	2	72	18	167	9	8	8
Pedestrians		7										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		1										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1065							
pX, platoon unblocked												
vC, conflicting volume	471			824			1187	1406	276	1032	1410	242
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			824			1187	1406	276	1032	1410	242
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			44	86	77	93	94	99
cM capacity (veh/h)	1087			802			128	129	721	122	128	754

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	18	326	326	173	40	313	158	256	24
Volume Left	18	0	0	0	40	0	0	72	9
Volume Right	0	0	0	10	0	0	2	167	8
cSH	1087	1700	1700	1700	802	1700	1700	276	170
Volume to Capacity	0.02	0.19	0.19	0.10	0.05	0.18	0.09	0.93	0.14
Queue Length 95th (ft)	1	0	0	0	4	0	0	217	12
Control Delay (s)	8.4	0.0	0.0	0.0	9.7	0.0	0.0	77.7	29.7
Lane LOS	A				A			F	D
Approach Delay (s)	0.2				0.8			77.7	29.7
Approach LOS								F	D

Intersection Summary				
Average Delay	13.0			
Intersection Capacity Utilization	32.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	30	292	25	35	460	7	1	23	2	41	21	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9		4.0	4.9	4.9			4.0	4.6		4.6
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00			1.00	1.00		1.00
Frt	1.00	0.99		1.00	1.00	0.85			1.00	0.95		1.00
Flt Protected	0.95	1.00		0.95	1.00	1.00			0.95	1.00		0.95
Satd. Flow (prot)	1770	5025		1770	3539	1583			1770	1767		1770
Flt Permitted	0.95	1.00		0.95	1.00	1.00			0.95	1.00		0.95
Satd. Flow (perm)	1770	5025		1770	3539	1583			1770	1767		1770
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.90	0.73	0.73	0.73	0.73	0.89
Adj. Flow (vph)	37	360	31	39	511	8	1	32	3	56	29	8
RTOR Reduction (vph)	0	5	0	0	0	1	0	0	0	13	0	0
Lane Group Flow (vph)	37	386	0	39	511	8	0	0	35	72	0	8
Turn Type	Prot			Prot		Perm		Prot	Prot			Prot
Protected Phases	5	2		1	6			3	3	8		7
Permitted Phases						6						
Actuated Green, G (s)	1.8	19.3		1.8	19.3	19.3			1.9	8.6		0.8
Effective Green, g (s)	1.8	19.3		1.8	19.3	19.3			1.9	8.6		0.8
Actuated g/C Ratio	0.04	0.40		0.04	0.40	0.40			0.04	0.18		0.02
Clearance Time (s)	4.0	4.9		4.0	4.9	4.9			4.0	4.6		4.6
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0			1.0	2.0		2.0
Lane Grp Cap (vph)	66	1996		66	1405	629			69	313		29
v/s Ratio Prot	0.02	0.08		c0.02	c0.14				c0.02	c0.04		0.00
v/s Ratio Perm						0.01						
v/c Ratio	0.56	0.19		0.59	0.36	0.01			0.51	0.23		0.28
Uniform Delay, d1	23.0	9.6		23.0	10.3	8.9			22.9	17.2		23.6
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2	6.3	0.0		9.1	0.1	0.0			2.1	0.1		1.9
Delay (s)	29.3	9.6		32.1	10.4	8.9			25.0	17.3		25.5
Level of Service	C	A		C	B	A			C	B		C
Approach Delay (s)		11.3			11.9					19.5		
Approach LOS		B			B					B		

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	12.9
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	SBR2
Lane Configurations	↑	↱	
Volume (vph)	67	48	3
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.6	4.6	
Lane Util. Factor	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	1.00	1.00	
Satd. Flow (prot)	1863	1583	
Flt Permitted	1.00	1.00	
Satd. Flow (perm)	1863	1583	
Peak-hour factor, PHF	0.89	0.89	0.89
Adj. Flow (vph)	75	54	3
RTOR Reduction (vph)	0	2	0
Lane Group Flow (vph)	75	55	0
Turn Type		Perm	
Protected Phases	4		
Permitted Phases		4	
Actuated Green, G (s)	8.1	8.1	
Effective Green, g (s)	8.1	8.1	
Actuated g/C Ratio	0.17	0.17	
Clearance Time (s)	4.6	4.6	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	311	264	
v/s Ratio Prot	0.04		
v/s Ratio Perm		0.03	
v/c Ratio	0.24	0.21	
Uniform Delay, d1	17.6	17.5	
Progression Factor	1.00	1.00	
Incremental Delay, d2	0.1	0.1	
Delay (s)	17.7	17.6	
Level of Service	B	B	
Approach Delay (s)	18.1		
Approach LOS	B		

Intersection Summary

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	3	54	613	13	58	374	14	1	22	9	95	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.9		4.0	4.9	4.9			4.0	4.6	
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00			1.00	1.00	
Frt		1.00	1.00		1.00	1.00	0.85			1.00	0.93	
Flt Protected		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)		1770	5069		1770	3539	1583			1770	1734	
Flt Permitted		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (perm)		1770	5069		1770	3539	1583			1770	1734	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.83	0.83	0.83	0.83	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	61	697	15	70	451	17	1	24	10	103	88
RTOR Reduction (vph)	0	0	1	0	0	0	1	0	0	0	21	0
Lane Group Flow (vph)	0	64	711	0	70	451	17	0	0	34	170	0
Turn Type	Prot	Prot			Prot		Perm		Prot	Prot		
Protected Phases	5	5	2		1	6			3	3	8	
Permitted Phases							6					
Actuated Green, G (s)		3.7	19.8		3.8	19.9	19.9			2.0	11.9	
Effective Green, g (s)		3.7	19.8		3.8	19.9	19.9			2.0	11.9	
Actuated g/C Ratio		0.07	0.36		0.07	0.36	0.36			0.04	0.22	
Clearance Time (s)		4.0	4.9		4.0	4.9	4.9			4.0	4.6	
Vehicle Extension (s)		1.0	2.0		1.0	2.0	2.0			1.0	2.0	
Lane Grp Cap (vph)		120	1838		123	1290	577			65	378	
v/s Ratio Prot		0.04	c0.14		c0.04	0.13				c0.02	c0.10	
v/s Ratio Perm							0.01					
v/c Ratio		0.53	0.39		0.57	0.35	0.03			0.52	0.45	
Uniform Delay, d1		24.6	12.9		24.6	12.6	11.1			25.8	18.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2		2.3	0.0		3.6	0.1	0.0			3.5	0.3	
Delay (s)		26.9	12.9		28.2	12.7	11.2			29.3	18.8	
Level of Service		C	B		C	B	B			C	B	
Approach Delay (s)			14.1			14.7					20.4	
Approach LOS			B			B					C	

Intersection Summary

HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	12.9
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Volume (vph)	16	111	57	1
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	
Lane Util. Factor	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	
Peak-hour factor, PHF	0.76	0.76	0.76	0.76
Adj. Flow (vph)	21	146	75	1
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	21	146	76	0
Turn Type	Prot		Perm	
Protected Phases	7	4		
Permitted Phases			4	
Actuated Green, G (s)	1.0	11.5	11.5	
Effective Green, g (s)	1.0	11.5	11.5	
Actuated g/C Ratio	0.02	0.21	0.21	
Clearance Time (s)	4.6	4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	
Lane Grp Cap (vph)	32	392	333	
v/s Ratio Prot	0.01	0.08		
v/s Ratio Perm			0.05	
v/c Ratio	0.66	0.37	0.23	
Uniform Delay, d1	26.6	18.5	17.9	
Progression Factor	1.00	1.00	1.00	
Incremental Delay, d2	31.3	0.2	0.1	
Delay (s)	57.9	18.7	18.0	
Level of Service	E	B	B	
Approach Delay (s)		21.9		
Approach LOS		C		

Intersection Summary

FRESNO HEAVY MAINTENANCE
EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: E Central Ave & Cedar Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	67	8	66	89	12	12	41	29	7	42	0
Peak Hour Factor	0.63	0.63	0.63	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88
Hourly flow rate (vph)	0	106	13	73	99	13	13	46	33	8	48	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	119	186	92	56
Volume Left (vph)	0	73	13	8
Volume Right (vph)	13	13	33	0
Hadj (s)	-0.03	0.07	-0.15	0.06
Departure Headway (s)	4.4	4.5	4.5	4.8
Degree Utilization, x	0.15	0.23	0.12	0.07
Capacity (veh/h)	775	769	739	693
Control Delay (s)	8.2	8.8	8.1	8.2
Approach Delay (s)	8.2	8.8	8.1	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.4		
HCM Level of Service	A		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: E Central Ave & Cedar Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	109	7	35	78	8	9	33	39	9	18	4
Peak Hour Factor	0.80	0.80	0.80	0.83	0.83	0.83	0.84	0.84	0.84	0.70	0.70	0.70
Hourly flow rate (vph)	4	136	9	42	94	10	11	39	46	13	26	6

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	149	146	96	44
Volume Left (vph)	4	42	11	13
Volume Right (vph)	9	10	46	6
Hadj (s)	0.00	0.05	-0.23	0.01
Departure Headway (s)	4.4	4.5	4.4	4.7
Degree Utilization, x	0.18	0.18	0.12	0.06
Capacity (veh/h)	786	770	762	704
Control Delay (s)	8.4	8.4	8.0	8.0
Approach Delay (s)	8.4	8.4	8.0	8.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
HCM Level of Service	A		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Volume (veh/h)	0	454	142	0	413	95
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.66	0.66	0.84	0.84
Hourly flow rate (vph)	0	554	215	0	492	113
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	215				769	215
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	215				769	215
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	86
cM capacity (veh/h)	1355				369	825

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	554	215	605
Volume Left	0	0	492
Volume Right	0	0	113
cSH	1700	1700	412
Volume to Capacity	0.33	0.13	1.47
Queue Length 95th (ft)	0	0	783
Control Delay (s)	0.0	0.0	248.9
Lane LOS			F
Approach Delay (s)	0.0	0.0	248.9
Approach LOS			F

Intersection Summary			
Average Delay	109.6		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: E Central Ave & SR 99 SB offramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Volume (veh/h)	0	385	152	0	244	91
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.77	0.75	0.75	0.99	0.99
Hourly flow rate (vph)	0	500	203	0	246	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	203				703	203
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	203				703	203
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				39	89
cM capacity (veh/h)	1369				404	838

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	500	203	338
Volume Left	0	0	246
Volume Right	0	0	92
cSH	1700	1700	470
Volume to Capacity	0.29	0.12	0.72
Queue Length 95th (ft)	0	0	143
Control Delay (s)	0.0	0.0	29.9
Lane LOS			D
Approach Delay (s)	0.0	0.0	29.9
Approach LOS			D

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	75	730	174	285	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.89	0.89	0.92	0.92
Hourly flow rate (vph)	93	901	196	320	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196				1442	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				1442	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				100	100
cM capacity (veh/h)	1377				136	688

Direction, Lane #	EB 1	WB 1
Volume Total	994	516
Volume Left	93	0
Volume Right	0	320
cSH	1377	1700
Volume to Capacity	0.07	0.30
Queue Length 95th (ft)	5	0
Control Delay (s)	1.7	0.0
Lane LOS	A	
Approach Delay (s)	1.7	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	108	533	141	618	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	127	627	153	672	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	153				1370	489
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153				1370	489
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				100	100
cM capacity (veh/h)	1427				147	579

Direction, Lane #	EB 1	WB 1
Volume Total	754	825
Volume Left	127	0
Volume Right	0	672
cSH	1427	1700
Volume to Capacity	0.09	0.49
Queue Length 95th (ft)	7	0
Control Delay (s)	2.2	0.0
Lane LOS	A	
Approach Delay (s)	2.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	330	0	0	755	156	485
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.82	0.82	0.91	0.91
Hourly flow rate (vph)	375	0	0	921	171	533
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		1296	375
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		1296	375
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		4	21
cM capacity (veh/h)			1183		179	671

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	375	921	704
Volume Left	0	0	171
Volume Right	0	0	533
cSH	1700	1700	402
Volume to Capacity	0.22	0.54	1.75
Queue Length 95th (ft)	0	0	1095
Control Delay (s)	0.0	0.0	371.9
Lane LOS			F
Approach Delay (s)	0.0	0.0	371.9
Approach LOS			F

Intersection Summary			
Average Delay	131.0		
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: S. Chestnut Ave & SR 99 NB off ramp

4/25/2011

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	317	0	0	532	32	299
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.84	0.84
Hourly flow rate (vph)	352	0	0	578	38	356
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			352		930	352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			352		930	352
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		87	49
cM capacity (veh/h)			1207		296	691

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	352	578	394
Volume Left	0	0	38
Volume Right	0	0	356
cSH	1700	1700	612
Volume to Capacity	0.21	0.34	0.64
Queue Length 95th (ft)	0	0	116
Control Delay (s)	0.0	0.0	20.9
Lane LOS			C
Approach Delay (s)	0.0	0.0	20.9
Approach LOS			C

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	165	27	158	303
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	190	31	182	348
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	917	205			221	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	917	205			221	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			87	
cM capacity (veh/h)	261	835			1348	

Direction, Lane #	NB 1	SB 1
Volume Total	221	530
Volume Left	0	182
Volume Right	31	0
cSH	1700	1348
Volume to Capacity	0.13	0.13
Queue Length 95th (ft)	0	12
Control Delay (s)	0.0	3.7
Lane LOS		A
Approach Delay (s)	0.0	3.7
Approach LOS		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	319	65	265	299
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.87	0.87	0.92	0.92
Hourly flow rate (vph)	0	0	367	75	288	325
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1305	404			441	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1305	404			441	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			74	
cM capacity (veh/h)	131	647			1119	

Direction, Lane #	NB 1	SB 1
Volume Total	441	613
Volume Left	0	288
Volume Right	75	0
cSH	1700	1119
Volume to Capacity	0.26	0.26
Queue Length 95th (ft)	0	26
Control Delay (s)	0.0	6.0
Lane LOS		A
Approach Delay (s)	0.0	6.0
Approach LOS		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	132	124	0	81	198
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.64	0.64	0.75	0.75
Hourly flow rate (vph)	0	155	194	0	108	264
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	194				349	194
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	194				349	194
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	69
cM capacity (veh/h)	1379				648	848

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	155	194	108	264
Volume Left	0	0	108	0
Volume Right	0	0	0	264
cSH	1700	1700	648	848
Volume to Capacity	0.09	0.11	0.17	0.31
Queue Length 95th (ft)	0	0	15	33
Control Delay (s)	0.0	0.0	11.7	11.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	11.3	
Approach LOS			B	

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Volume (veh/h)	0	297	64	0	56	72
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.85	0.85
Hourly flow rate (vph)	0	386	83	0	66	85
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	83				469	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	83				469	83
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	91
cM capacity (veh/h)	1514				553	976

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	386	83	66	85
Volume Left	0	0	66	0
Volume Right	0	0	0	85
cSH	1700	1700	553	976
Volume to Capacity	0.23	0.05	0.12	0.09
Queue Length 95th (ft)	0	0	10	7
Control Delay (s)	0.0	0.0	12.4	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	
Approach LOS			B	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	79	136	114	68	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.73	0.73	0.92	0.92
Hourly flow rate (vph)	93	160	156	93	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	156				549	203
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	156				549	203
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				100	100
cM capacity (veh/h)	1424				465	838

Direction, Lane #	EB 1	WB 1
Volume Total	253	249
Volume Left	93	0
Volume Right	0	93
cSH	1424	1700
Volume to Capacity	0.07	0.15
Queue Length 95th (ft)	5	0
Control Delay (s)	3.2	0.0
Lane LOS	A	
Approach Delay (s)	3.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	165	183	67	88	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.76	0.76	0.92	0.92
Hourly flow rate (vph)	176	195	88	116	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	88				692	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				692	146
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				100	100
cM capacity (veh/h)	1508				362	901

Direction, Lane #	EB 1	WB 1
Volume Total	370	204
Volume Left	176	0
Volume Right	0	116
cSH	1508	1700
Volume to Capacity	0.12	0.12
Queue Length 95th (ft)	10	0
Control Delay (s)	4.2	0.0
Lane LOS	A	
Approach Delay (s)	4.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Adams Ave & Chestnut Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	16	50	4	5	48	15	5	63	4	8	54	23
Peak Hour Factor	0.58	0.58	0.58	0.68	0.68	0.68	0.71	0.71	0.71	0.75	0.75	0.75
Hourly flow rate (vph)	28	86	7	7	71	22	7	89	6	11	72	31

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	121	100	101	113
Volume Left (vph)	28	7	7	11
Volume Right (vph)	7	22	6	31
Hadj (s)	0.05	-0.08	0.01	-0.11
Departure Headway (s)	4.6	4.5	4.6	4.4
Degree Utilization, x	0.15	0.12	0.13	0.14
Capacity (veh/h)	739	754	742	760
Control Delay (s)	8.4	8.1	8.2	8.2
Approach Delay (s)	8.4	8.1	8.2	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.2		
HCM Level of Service	A		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	29	57	4	4	42	7	2	68	8	8	57	28
Peak Hour Factor	0.83	0.83	0.83	0.70	0.70	0.70	0.71	0.71	0.71	0.66	0.66	0.66
Hourly flow rate (vph)	35	69	5	6	60	10	3	96	11	12	86	42

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	108	76	110	141
Volume Left (vph)	35	6	3	12
Volume Right (vph)	5	10	11	42
Hadj (s)	0.07	-0.03	-0.02	-0.13
Departure Headway (s)	4.6	4.6	4.5	4.3
Degree Utilization, x	0.14	0.10	0.14	0.17
Capacity (veh/h)	724	730	761	782
Control Delay (s)	8.4	8.1	8.2	8.2
Approach Delay (s)	8.4	8.1	8.2	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.2		
HCM Level of Service	A		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
9: Clayton Ave & SR 99 SB off ramp

4/25/2011

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	84	87	0	23	6
Sign Control	Free			Stop	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	117	98	0	28	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		14	0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		14	0	0	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	100		90	100	97	99
cM capacity (veh/h)	1623		971	896	896	1085

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	117	98	36
Volume Left	0	98	0
Volume Right	117	0	7
cSH	1700	971	929
Volume to Capacity	0.07	0.10	0.04
Queue Length 95th (ft)	0	8	3
Control Delay (s)	0.0	9.1	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	9.1	9.0
Approach LOS		A	A

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	136	95	0	96	10
Sign Control	Free			Stop	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.91	0.91
Hourly flow rate (vph)	0	170	106	0	105	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		53	0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		53	0	0	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	100		88	100	88	99
cM capacity (veh/h)	1623		852	896	896	1085

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	170	106	116
Volume Left	0	106	0
Volume Right	170	0	11
cSH	1700	852	911
Volume to Capacity	0.10	0.12	0.13
Queue Length 95th (ft)	0	11	11
Control Delay (s)	0.0	9.8	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	9.8	9.5
Approach LOS		A	A

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Volume (veh/h)	0	0	79	75	0	0	497	18	79	346
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.80	0.80	0.80	0.79	0.79	0.79	0.76	0.76
Hourly flow rate (vph)	0	0	99	94	0	0	629	23	104	455
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	937	932	652			94			943	47
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	937	932	652			94			943	47
tC, single (s)	7.5	6.5	4.1			4.1			6.5	6.9
tC, 2 stage (s)										
tF (s)	3.5	4.0	2.2			2.2			4.0	3.3
p0 queue free %	100	100	89			100			55	55
cM capacity (veh/h)	73	237	931			1498			233	1012

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1	NW 2
Volume Total	99	47	47	419	232	104	455
Volume Left	99	0	0	0	0	0	0
Volume Right	0	0	0	0	23	0	455
cSH	931	1700	1700	1700	1700	233	1012
Volume to Capacity	0.11	0.03	0.03	0.25	0.14	0.45	0.45
Queue Length 95th (ft)	9	0	0	0	0	53	59
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	32.3	11.4
Lane LOS	A					D	B
Approach Delay (s)	4.8			0.0		15.3	
Approach LOS						C	

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Volume (veh/h)	0	0	44	111	0	0	476	12	81	400
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.88	0.83	0.83	0.83	0.81	0.81
Hourly flow rate (vph)	0	0	50	126	0	0	573	14	100	494
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	794	807	588			126			814	63
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	794	807	588			126			814	63
tC, single (s)	7.5	6.5	4.1			4.1			6.5	6.9
tC, 2 stage (s)										
tF (s)	3.5	4.0	2.2			2.2			4.0	3.3
p0 queue free %	100	100	95			100			66	50
cM capacity (veh/h)	99	298	983			1458			295	988

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1	NW 2
Volume Total	50	63	63	382	206	100	494
Volume Left	50	0	0	0	0	0	0
Volume Right	0	0	0	0	14	0	494
cSH	983	1700	1700	1700	1700	295	988
Volume to Capacity	0.05	0.04	0.04	0.22	0.12	0.34	0.50
Queue Length 95th (ft)	4	0	0	0	0	36	72
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	23.3	12.2
Lane LOS	A					C	B
Approach Delay (s)	2.5			0.0		14.1	
Approach LOS						B	

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: SR 99 SB onramp & S Clovis Ave

4/25/2011

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Lane Configurations											
Volume (veh/h)	0	0	3	136	14	422	79	81	19	61	24
Sign Control	Stop			Free			Free			Stop	
Grade	0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.80	0.80	0.80	0.80	0.80	0.80	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	4	170	18	528	99	101	22	69	27
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											4
Median type				None			None				
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	1325	1441	200			170			1297	1382	100
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1325	1441	200			170			1297	1382	100
tC, single (s)	7.5	6.5	4.1			4.1			7.5	6.5	6.9
tC, 2 stage (s)											
tF (s)	3.5	4.0	2.2			2.2			3.5	4.0	3.3
p0 queue free %	100	100	100			62			74	22	97
cM capacity (veh/h)	30	82	1370			1405			84	89	936

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SE 1
Volume Total	4	113	74	528	66	134	118
Volume Left	4	0	0	528	0	0	22
Volume Right	0	0	18	0	0	101	27
cSH	1370	1700	1700	1405	1700	1700	113
Volume to Capacity	0.00	0.07	0.04	0.38	0.04	0.08	1.04
Queue Length 95th (ft)	0	0	0	44	0	0	175
Control Delay (s)	7.6	0.0	0.0	9.1	0.0	0.0	169.7
Lane LOS	A			A			F
Approach Delay (s)	0.1			6.6			169.7
Approach LOS							F

Intersection Summary				
Average Delay	24.0			
Intersection Capacity Utilization	42.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
11: SR 99 SB onramp & S Clovis Ave

4/25/2011

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Lane Configurations											
Volume (veh/h)	0	0	12	111	6	393	85	82	41	93	95
Sign Control	Stop			Free			Free			Stop	
Grade	0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.87	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	0	14	128	7	462	100	96	48	109	112
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											4
Median type				None			None				
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	1188	1280	196			128			1164	1228	98
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1188	1280	196			128			1164	1228	98
tC, single (s)	7.5	6.5	4.1			4.1			7.5	6.5	6.9
tC, 2 stage (s)											
tF (s)	3.5	4.0	2.2			2.2			3.5	4.0	3.3
p0 queue free %	100	100	99			68			57	8	88
cM capacity (veh/h)	20	111	1374			1456			112	119	939

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SE 1
Volume Total	14	85	49	462	67	130	269
Volume Left	14	0	0	462	0	0	48
Volume Right	0	0	7	0	0	96	112
cSH	1374	1700	1700	1456	1700	1700	189
Volume to Capacity	0.01	0.05	0.03	0.32	0.04	0.08	1.43
Queue Length 95th (ft)	1	0	0	35	0	0	407
Control Delay (s)	7.6	0.0	0.0	8.6	0.0	0.0	266.7
Lane LOS	A			A			F
Approach Delay (s)	0.7			6.0			266.7
Approach LOS							F

Intersection Summary				
Average Delay	70.5			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HANFORD HEAVY MAINTENANCE
EXISTING PLUS PROJECT CONDITIONS

HCM Signalized Intersection Capacity Analysis
1: Houston Ave & Central Valley Hwy

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	50	24	11	60	77	20	193	5	79	241	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.93		1.00	1.00		1.00	0.99	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1725		1770	1856		1770	1838	
Flt Permitted		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1779			1725		1770	1856		1770	1838	
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	47	53	25	12	67	86	21	201	5	85	259	25
RTOR Reduction (vph)	0	13	0	0	56	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	112	0	0	109	0	21	204	0	85	279	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		16.0			16.0		4.0	16.0		6.0	18.0	
Effective Green, g (s)		16.0			16.0		4.0	16.0		6.0	18.0	
Actuated g/C Ratio		0.23			0.23		0.06	0.23		0.09	0.26	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		407			394		101	424		152	473	
v/s Ratio Prot		c0.06			c0.06		0.01	0.11		c0.05	c0.15	
v/s Ratio Perm												
v/c Ratio		0.27			0.28		0.21	0.48		0.56	0.59	
Uniform Delay, d1		22.2			22.2		31.5	23.4		30.7	22.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			1.7		4.6	3.9		14.0	5.3	
Delay (s)		23.9			24.0		36.1	27.3		44.8	28.1	
Level of Service		C			C		D	C		D	C	
Approach Delay (s)		23.9			24.0			28.1			31.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: Houston Ave & Central Valley Hwy

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↑		↰	↑	
Volume (vph)	23	50	24	6	78	106	31	365	14	94	179	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1720		1770	1853		1770	1828	
Flt Permitted		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1779			1720		1770	1853		1770	1828	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.85	0.85	0.85	0.89	0.89	0.89
Adj. Flow (vph)	25	54	26	7	93	126	36	429	16	106	201	29
RTOR Reduction (vph)	0	17	0	0	65	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	88	0	0	161	0	36	443	0	106	223	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		16.0			16.0		4.0	16.0		6.0	18.0	
Effective Green, g (s)		16.0			16.0		4.0	16.0		6.0	18.0	
Actuated g/C Ratio		0.23			0.23		0.06	0.23		0.09	0.26	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		407			393		101	424		152	470	
v/s Ratio Prot		c0.05			c0.09		0.02	c0.24		c0.06	0.12	
v/s Ratio Perm												
v/c Ratio		0.22			0.41		0.36	1.05		0.70	0.47	
Uniform Delay, d1		21.9			23.0		31.8	27.0		31.1	22.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			3.1		9.6	56.2		23.3	3.4	
Delay (s)		23.1			26.1		41.3	83.2		54.4	25.4	
Level of Service		C			C		D	F		D	C	
Approach Delay (s)		23.1			26.1			80.1			34.5	
Approach LOS		C			C			F			C	

Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Houston Ave & 7Th Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	2	116	0	3	143	1	1	1	1	2	1	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.38	0.38	0.38	0.75	0.75	0.75
Hourly flow rate (vph)	2	135	0	3	157	1	3	3	3	3	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	96	17	1	83	16	4	1			5		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96	17	1	83	16	4	1			5		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	85	100	100	82	100	100			100		
cM capacity (veh/h)	762	874	1083	795	875	1080	1621			1616		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	137	162	8	4
Volume Left	2	3	3	3
Volume Right	0	1	3	0
cSH	872	875	1621	1616
Volume to Capacity	0.16	0.18	0.00	0.00
Queue Length 95th (ft)	14	17	0	0
Control Delay (s)	9.9	10.0	2.4	4.8
Lane LOS	A	B	A	A
Approach Delay (s)	9.9	10.0	2.4	4.8
Approach LOS	A	B		

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	19.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Houston Ave & 7Th Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	158	1	2	172	1	2	1	1	2	0	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.50	0.50	0.50	0.75	0.75	0.75
Hourly flow rate (vph)	1	180	1	2	202	1	4	2	2	3	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	119	18	1	108	18	3	1			4		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	119	18	1	108	18	3	1			4		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	79	100	100	77	100	100			100		
cM capacity (veh/h)	700	872	1084	730	873	1081	1621			1618		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	182	206	8	4
Volume Left	1	2	4	3
Volume Right	1	1	2	1
cSH	872	872	1621	1618
Volume to Capacity	0.21	0.24	0.00	0.00
Queue Length 95th (ft)	20	23	0	0
Control Delay (s)	10.2	10.4	3.6	4.8
Lane LOS	B	B	A	A
Approach Delay (s)	10.2	10.4	3.6	4.8
Approach LOS	B	B		

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Idaho Ave & Central Valley Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	3	11	5	11	15	11	6	211	16	9	229	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.61	0.61	0.61	0.80	0.80	0.80	0.90	0.90	0.90
Hourly flow rate (vph)	3	12	6	18	25	18	8	264	20	10	254	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	598	578	259	579	572	274	263			284		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	578	259	579	572	274	263			284		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	97	99	96	94	98	99			99		
cM capacity (veh/h)	382	421	780	409	424	765	1301			1279		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	61	291	273
Volume Left	3	18	8	10
Volume Right	6	18	20	9
cSH	471	483	1301	1279
Volume to Capacity	0.04	0.13	0.01	0.01
Queue Length 95th (ft)	4	11	0	1
Control Delay (s)	13.0	13.5	0.3	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	13.0	13.5	0.3	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	27.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Idaho Ave & Central Valley Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	13	3	18	9	14	7	347	10	6	202	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.72	0.72	0.72	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	6	16	4	25	12	19	8	413	12	7	240	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	718	698	242	704	694	419	244			425		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	718	698	242	704	694	419	244			425		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	96	100	93	97	97	99			99		
cM capacity (veh/h)	322	360	797	335	362	634	1322			1134		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	25	57	433	251
Volume Left	6	25	8	7
Volume Right	4	19	12	4
cSH	379	407	1322	1134
Volume to Capacity	0.07	0.14	0.01	0.01
Queue Length 95th (ft)	5	12	0	0
Control Delay (s)	15.2	15.3	0.2	0.3
Lane LOS	C	C	A	A
Approach Delay (s)	15.2	15.3	0.2	0.3
Approach LOS	C	C		

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	32.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Idaho Ave & 7Th Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	21	1	0	28	1	0	1	0	0	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.68	0.68	0.68	0.25	0.25	0.25	0.75	0.75	0.75
Hourly flow rate (vph)	0	28	1	0	41	1	0	4	0	0	3	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	43			29			73	71	29	73	71	42
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	43			29			73	71	29	73	71	42
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1566			1584			914	819	1046	915	819	1029

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	43	4	4
Volume Left	0	0	0	0
Volume Right	1	1	0	1
cSH	1566	1584	819	879
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	9.4	9.1
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.4	9.1
Approach LOS			A	A

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Idaho Ave & 7Th Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	20	1	1	24	1	2	1	0	1	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.69	0.69	0.69	0.75	0.75	0.75	0.50	0.50	0.50
Hourly flow rate (vph)	0	25	1	1	35	1	3	1	0	2	4	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	36			27			68	65	26	65	65	36
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	36			27			68	65	26	65	65	36
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1575			1587			918	825	1050	927	825	1037

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	38	4	8
Volume Left	0	1	3	2
Volume Right	1	1	0	2
cSH	1575	1587	885	895
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.3	9.1	9.1
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.3	9.1	9.1
Approach LOS			A	A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

WASCO HEAVY MAINTENANCE
EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: Paso Robles Hwy & Wasco Pond Rd

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	184	57	18	208	17	43	82	24	18	82	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.92	0.92	0.92	0.93	0.93	0.93	0.83	0.83	0.83
Hourly flow rate (vph)	90	271	84	20	226	18	46	88	26	22	99	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	245			354			838	776	312	794	808	235
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	245			354			838	776	312	794	808	235
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			98			76	71	96	90	66	96
cM capacity (veh/h)	1322			1204			190	301	728	214	289	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	90	354	20	245	160	152
Volume Left	90	0	20	0	46	22
Volume Right	0	84	0	18	26	31
cSH	1322	1700	1204	1700	280	315
Volume to Capacity	0.07	0.21	0.02	0.14	0.57	0.48
Queue Length 95th (ft)	5	0	1	0	82	62
Control Delay (s)	7.9	0.0	8.0	0.0	33.7	26.7
Lane LOS	A		A		D	D
Approach Delay (s)	1.6		0.6		33.7	26.7
Approach LOS					D	D

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Paso Robles Hwy & Wasco Pond Rd

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	57	215	45	41	231	18	44	86	22	20	132	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.89	0.89	0.89	0.91	0.91	0.91
Hourly flow rate (vph)	65	244	51	51	289	22	49	97	25	22	145	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	311			295			948	813	270	849	828	300
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311			295			948	813	270	849	828	300
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			96			58	66	97	88	48	89
cM capacity (veh/h)	1249			1266			118	284	769	187	279	740

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	65	295	51	311	171	252
Volume Left	65	0	51	0	49	22
Volume Right	0	51	0	22	25	85
cSH	1249	1700	1266	1700	216	335
Volume to Capacity	0.05	0.17	0.04	0.18	0.79	0.75
Queue Length 95th (ft)	4	0	3	0	142	146
Control Delay (s)	8.0	0.0	8.0	0.0	64.9	42.1
Lane LOS	A		A		F	E
Approach Delay (s)	1.4		1.1		64.9	42.1
Approach LOS					F	E

Intersection Summary				
Average Delay	19.7			
Intersection Capacity Utilization	46.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: 6th Street & Wasco Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	0	5	0	1	0	7	105	2	0	87	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.25	0.25	0.25	0.89	0.89	0.89	0.96	0.96	0.96
Hourly flow rate (vph)	27	0	9	0	4	0	8	118	2	0	91	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	232	232	96	240	237	119	102			120		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	232	232	96	240	237	119	102			120		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	100	99	100	99			100		
cM capacity (veh/h)	717	664	960	705	660	933	1490			1467		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	36	4	8	120	102
Volume Left	27	0	8	0	0
Volume Right	9	0	0	2	11
cSH	765	660	1490	1700	1467
Volume to Capacity	0.05	0.01	0.01	0.07	0.00
Queue Length 95th (ft)	4	0	0	0	0
Control Delay (s)	9.9	10.5	7.4	0.0	0.0
Lane LOS	A	B	A		
Approach Delay (s)	9.9	10.5	0.5		0.0
Approach LOS	A	B			

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	20.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: 6th Street & Wasco Ave

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	0	6	0	0	0	9	75	0	0	161	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.92	0.92	0.92	0.93	0.93	0.93	0.83	0.83	0.83
Hourly flow rate (vph)	21	0	7	0	0	0	10	81	0	0	194	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	310	310	210	317	325	81	225			81		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310	310	210	317	325	81	225			81		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	100	100	100	99			100		
cM capacity (veh/h)	639	600	831	627	588	979	1343			1517		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	28	0	10	81	225
Volume Left	21	0	10	0	0
Volume Right	7	0	0	0	31
cSH	680	1700	1343	1700	1517
Volume to Capacity	0.04	0.00	0.01	0.05	0.00
Queue Length 95th (ft)	3	0	1	0	0
Control Delay (s)	10.5	0.0	7.7	0.0	0.0
Lane LOS	B	A	A		
Approach Delay (s)	10.5	0.0	0.8		0.0
Approach LOS	B	A			

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	20.1%	ICU Level of Service		A
Analysis Period (min)	15			

SHAFTER HEAVY MAINTENANCE
EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: Burbank Street & Santa Fe Way

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	19	16	1	11	8	12	277	2	15	467	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.50	0.50	0.50	0.71	0.71	0.71	0.79	0.79	0.79
Hourly flow rate (vph)	2	34	29	2	22	16	17	390	3	19	591	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1081	1054	392	1100	1056	591	591			393		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1081	1054	392	1100	1056	591	591			393		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	84	96	99	90	97	98			98		
cM capacity (veh/h)	170	218	657	156	218	507	985			1166		

Direction, Lane #	EB 1	WB 1	SE 1	NW 1
Volume Total	64	40	410	610
Volume Left	2	2	17	19
Volume Right	29	16	3	0
cSH	307	275	985	1166
Volume to Capacity	0.21	0.15	0.02	0.02
Queue Length 95th (ft)	19	13	1	1
Control Delay (s)	19.8	20.3	0.5	0.5
Lane LOS	C	C	A	A
Approach Delay (s)	19.8	20.3	0.5	0.5
Approach LOS	C	C		

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	40.1%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
1: Burbank Street & Santa Fe Way

4/25/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	14	12	0	19	35	19	501	1	21	350	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.52	0.52	0.52	0.91	0.91	0.91	0.92	0.92	0.92
Hourly flow rate (vph)	2	25	21	0	37	67	21	551	1	23	380	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1106	1022	551	1055	1021	382	384			552		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1106	1022	551	1055	1021	382	384			552		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	89	96	100	84	90	98			98		
cM capacity (veh/h)	144	227	534	174	227	665	1175			1018		

Direction, Lane #	EB 1	WB 1	SE 1	NW 1
Volume Total	48	104	573	407
Volume Left	2	0	21	23
Volume Right	21	67	1	3
cSH	296	396	1175	1018
Volume to Capacity	0.16	0.26	0.02	0.02
Queue Length 95th (ft)	14	26	1	2
Control Delay (s)	19.5	17.3	0.5	0.7
Lane LOS	C	C	A	A
Approach Delay (s)	19.5	17.3	0.5	0.7
Approach LOS	C	C		

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	73	5	229	61	15	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.91	0.91
Adj. Flow (vph)	90	6	283	75	16	497
RTOR Reduction (vph)	0	5	0	31	0	0
Lane Group Flow (vph)	90	1	283	44	16	497
Turn Type		Prot		Perm	Prot	
Protected Phases	3	3	6		5	2
Permitted Phases				6		
Actuated Green, G (s)	3.2	3.2	22.0	22.0	0.7	26.7
Effective Green, g (s)	3.2	3.2	22.0	22.0	0.7	26.7
Actuated g/C Ratio	0.08	0.08	0.58	0.58	0.02	0.70
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	149	134	1081	919	33	1312
v/s Ratio Prot	c0.05	0.00	0.15		0.01	c0.27
v/s Ratio Perm				0.03		
v/c Ratio	0.60	0.00	0.26	0.05	0.48	0.38
Uniform Delay, d1	16.7	15.9	3.9	3.4	18.4	2.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.7	0.0	0.1	0.0	10.8	0.2
Delay (s)	23.5	15.9	4.1	3.5	29.2	2.4
Level of Service	C	B	A	A	C	A
Approach Delay (s)	23.0		3.9			3.3
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	55	21	504	58	9	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Peak-hour factor, PHF	0.90	0.90	0.88	0.88	0.92	0.92
Adj. Flow (vph)	61	23	573	66	10	303
RTOR Reduction (vph)	0	21	0	26	0	0
Lane Group Flow (vph)	61	2	573	40	10	303
Turn Type		Prot		Perm	Prot	
Protected Phases	3	3	6		5	2
Permitted Phases				6		
Actuated Green, G (s)	3.1	3.1	24.5	24.5	0.7	29.2
Effective Green, g (s)	3.1	3.1	24.5	24.5	0.7	29.2
Actuated g/C Ratio	0.08	0.08	0.61	0.61	0.02	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	136	122	1133	962	31	1350
v/s Ratio Prot	c0.03	0.00	c0.31		0.01	c0.16
v/s Ratio Perm				0.03		
v/c Ratio	0.45	0.01	0.51	0.04	0.32	0.22
Uniform Delay, d1	17.8	17.2	4.5	3.2	19.6	1.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	0.4	0.0	6.0	0.1
Delay (s)	20.1	17.2	4.8	3.2	25.5	1.9
Level of Service	C	B	A	A	C	A
Approach Delay (s)	19.3		4.7			2.7
Approach LOS	B		A			A

Intersection Summary

HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	40.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

CORCORAN EXISTING PLUS PROJECT CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
1: Brokaw Ave & Chittenden Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	6	0	0	0	5	0	0	0	87	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.71	0.71	0.71	0.70	0.70	0.70	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	10	0	0	0	7	0	0	0	98	42
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											284	
pX, platoon unblocked												
vC, conflicting volume	133	133	70	73	154	0	139			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133	133	70	73	154	0	139			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	100			100		
cM capacity (veh/h)	823	753	979	897	734	1084	1442			1622		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	10	0	7	0	65	74
Volume Left	0	0	7	0	0	0
Volume Right	10	0	0	0	0	42
cSH	979	1700	1442	1700	1700	1700
Volume to Capacity	0.01	0.00	0.00	0.00	0.04	0.04
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	8.7	0.0	7.5	0.0	0.0	0.0
Lane LOS	A	A	A			
Approach Delay (s)	8.7	0.0	7.5		0.0	
Approach LOS	A	A				

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	14.2%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
1: Brokaw Ave & Chittenden Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	6	0	0	0	16	0	0	0	95	35
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.75	0.75	0.75	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	9	0	0	0	21	0	0	0	119	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											284	
pX, platoon unblocked												
vC, conflicting volume	183	183	81	111	205	0	162			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	183	183	81	111	205	0	162			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	98			100		
cM capacity (veh/h)	752	699	962	839	680	1084	1414			1622		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	9	0	21	0	79	83
Volume Left	0	0	21	0	0	0
Volume Right	9	0	0	0	0	44
cSH	962	1700	1414	1700	1700	1700
Volume to Capacity	0.01	0.00	0.02	0.00	0.05	0.05
Queue Length 95th (ft)	1	0	1	0	0	0
Control Delay (s)	8.8	0.0	7.6	0.0	0.0	0.0
Lane LOS	A	A	A			
Approach Delay (s)	8.8	0.0	7.6		0.0	
Approach LOS	A	A				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	20	189	10	5	88	12	6	14	31	9	21	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.76	0.76	0.76	0.54	0.54	0.54	0.83	0.83	0.83
Hourly flow rate (vph)	25	236	12	7	116	16	11	26	57	11	25	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	132			249			478	437	242	500	436	124
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	132			249			478	437	242	500	436	124
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			98	95	93	97	95	96
cM capacity (veh/h)	1454			1317			452	502	796	422	503	927

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	274	138	94	72
Volume Left	25	7	11	11
Volume Right	12	16	57	36
cSH	1454	1317	637	628
Volume to Capacity	0.02	0.00	0.15	0.12
Queue Length 95th (ft)	1	0	13	10
Control Delay (s)	0.8	0.4	11.6	11.5
Lane LOS	A	A	B	B
Approach Delay (s)	0.8	0.4	11.6	11.5
Approach LOS			B	B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Whitley Ave & Chittenden Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	41	207	20	12	165	18	11	21	49	5	30	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.89	0.89	0.89	0.91	0.91	0.91	0.73	0.73	0.73
Hourly flow rate (vph)	55	280	27	13	185	20	12	23	54	7	41	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	206			307			711	637	293	692	640	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	206			307			711	637	293	692	640	196
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			96	94	93	98	89	92
cM capacity (veh/h)	1366			1254			283	375	746	305	373	846

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	362	219	89	112
Volume Left	55	13	12	7
Volume Right	27	20	54	64
cSH	1366	1254	504	538
Volume to Capacity	0.04	0.01	0.18	0.21
Queue Length 95th (ft)	3	1	16	19
Control Delay (s)	1.5	0.6	13.7	13.4
Lane LOS	A	A	B	B
Approach Delay (s)	1.5	0.6	13.7	13.4
Approach LOS			B	B

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	40.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	114	9	14	67	6	4	11	13	3	15	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.76	0.76	0.76	0.78	0.78	0.78	0.70	0.70	0.70
Hourly flow rate (vph)	88	156	12	18	88	8	5	14	17	4	21	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	96			168			496	471	84	406	473	48
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96			168			496	471	84	406	473	48
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			99			99	97	98	99	95	93
cM capacity (veh/h)	1495			1407			389	455	958	480	454	1011

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	166	90	62	52	36	93
Volume Left	88	0	18	0	5	4
Volume Right	0	12	0	8	17	67
cSH	1495	1700	1407	1700	583	757
Volume to Capacity	0.06	0.05	0.01	0.03	0.06	0.12
Queue Length 95th (ft)	5	0	1	0	5	10
Control Delay (s)	4.2	0.0	2.3	0.0	11.6	10.4
Lane LOS	A		A		B	B
Approach Delay (s)	2.7		1.3		11.6	10.4
Approach LOS					B	B

Intersection Summary				
Average Delay	4.5			
Intersection Capacity Utilization	22.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	114	6	15	112	13	9	14	17	4	12	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.81	0.81	0.81	0.91	0.91	0.91	0.81	0.81	0.81
Hourly flow rate (vph)	124	168	9	19	138	16	10	15	19	5	15	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	154			176			594	610	88	541	607	77
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	154			176			594	610	88	541	607	77
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			99			97	96	98	99	96	94
cM capacity (veh/h)	1424			1397			326	367	952	372	369	968

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	207	93	88	85	44	81
Volume Left	124	0	19	0	10	5
Volume Right	0	9	0	16	19	62
cSH	1424	1700	1397	1700	479	695
Volume to Capacity	0.09	0.05	0.01	0.05	0.09	0.12
Queue Length 95th (ft)	7	0	1	0	8	10
Control Delay (s)	4.9	0.0	1.7	0.0	13.3	10.9
Lane LOS	A		A		B	B
Approach Delay (s)	3.4		0.9		13.3	10.9
Approach LOS					B	B

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	0	0	11	0	0	0	5	0	0
Sign Control		Yield			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.69	0.69	0.69	0.83	0.83	0.83	0.79	0.79	0.79
Hourly flow rate (vph)	0	0	0	0	0	16	0	0	0	6	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	29	13	0	13	13	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	29	13	0	13	13	0	0			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			100		
cM capacity (veh/h)	963	878	1085	1001	878	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	16	0	6
Volume Left	0	0	0	6
Volume Right	0	16	0	0
cSH	1700	1085	1700	1623
Volume to Capacity	0.00	0.01	0.00	0.00
Queue Length 95th (ft)	0	1	0	0
Control Delay (s)	0.0	8.4	0.0	7.2
Lane LOS	A	A		A
Approach Delay (s)	0.0	8.4	0.0	7.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	0	0	7	0	0	0	1	0	0
Sign Control		Yield			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	28	0	0	0	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	31	3	0	3	3	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	31	3	0	3	3	0	0			0		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	97	100			100		
cM capacity (veh/h)	952	892	1085	1018	892	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	28	0	1
Volume Left	0	0	0	1
Volume Right	0	28	0	0
cSH	1700	1085	1700	1623
Volume to Capacity	0.00	0.03	0.00	0.00
Queue Length 95th (ft)	0	2	0	0
Control Delay (s)	0.0	8.4	0.0	7.2
Lane LOS	A	A		A
Approach Delay (s)	0.0	8.4	0.0	7.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		