Appendix E
No-Build Synchro Output

FRESNO NO-BUILD CONDITIONS

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	255	0	0	0	0	0	0	60
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	63	0	0	277	0	0	0	0	0	0	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	277			63			340	340	63	340	340	277
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	277			63			340	340	63	340	340	277
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	91
cM capacity (veh/h)	1286			1540			561	581	1002	614	581	762

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	63	277	0	0	65
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	65
cSH	1286	1540	1700	1700	762
Volume to Capacity	0.00	0.00	0.00	0.00	0.09
Queue Length 95th (ft)	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	10.2
Lane LOS			A	A	B
Approach Delay (s)	0.0	0.0	0.0	10.2	
Approach LOS			A	B	

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	23.8%	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	46	0	0	402	0	0	0	0	0	0	157
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	50	0	0	437	0	0	0	0	0	0	171
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	437			50			487	487	50	487	487	437
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	437			50			487	487	50	487	487	437
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	72
cM capacity (veh/h)	1123			1557			356	481	1018	491	481	620

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	50	437	0	0	171
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	171
cSH	1123	1557	1700	1700	620
Volume to Capacity	0.00	0.00	0.00	0.00	0.28
Queue Length 95th (ft)	0	0	0	0	28
Control Delay (s)	0.0	0.0	0.0	0.0	13.0
Lane LOS			A	A	B
Approach Delay (s)	0.0	0.0	0.0	13.0	
Approach LOS			A	B	

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	37.5%	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	267	0	0	194	47	425	112	90	0	0	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	0.92
Hourly flow rate (vph)	21	290	0	0	211	51	462	122	98	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	117	193	141	121	523	159
Volume Left (vph)	21	0	0	0	462	0
Volume Right (vph)	0	0	0	51	0	98
Hadj (s)	0.12	0.03	0.03	-0.26	0.48	-0.40
Departure Headway (s)	7.2	7.1	7.2	6.9	6.7	5.8
Degree Utilization, x	0.24	0.38	0.28	0.23	0.97	0.26
Capacity (veh/h)	492	501	493	514	527	601
Control Delay (s)	11.3	13.3	11.9	10.9	56.8	9.6
Approach Delay (s)	12.6		11.4		45.8	
Approach LOS	B		B		E	

Intersection Summary			
Delay	30.4		
HCM Level of Service	D		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Van Ness Ave & 41 NB Off-Ramp

4/9/2012

Movement	SBL2	SBL	SBR	NWL	NWR	NWR2	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop		Stop				Stop			Stop	
Volume (vph)	92	273	0	0	494	118	247	61	112	0	0	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	0.92
Hourly flow rate (vph)	100	297	0	0	537	128	268	66	122	0	0	0

Direction, Lane #	SB 1	SB 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	199	198	358	307	302	155
Volume Left (vph)	100	0	0	0	268	0
Volume Right (vph)	0	0	0	128	0	122
Hadj (s)	0.29	0.03	0.03	-0.26	0.48	-0.52
Departure Headway (s)	7.4	7.2	6.8	6.5	7.7	6.7
Degree Utilization, x	0.41	0.39	0.68	0.56	0.64	0.29
Capacity (veh/h)	466	482	511	527	445	514
Control Delay (s)	14.3	13.6	21.9	16.2	22.2	11.1
Approach Delay (s)	13.9		19.3		18.5	
Approach LOS	B		C		C	

Intersection Summary			
Delay	17.6		
HCM Level of Service	C		
Intersection Capacity Utilization	41.8%	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	666	59	0	6	808
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	724	64	0	7	878
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1132				
pX, platoon unblocked						
vC, conflicting volume	64				788	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	64				788	64
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	12
cM capacity (veh/h)	1538				360	1000

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	724	64	7	878
Volume Left	0	0	7	0
Volume Right	0	0	0	878
cSH	1700	1700	360	1000
Volume to Capacity	0.43	0.04	0.02	0.88
Queue Length 95th (ft)	0	0	1	302
Control Delay (s)	0.0	0.0	15.2	27.8
Lane LOS			C	D
Approach Delay (s)	0.0	0.0	27.7	
Approach LOS			D	

Intersection Summary			
Average Delay	14.7		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
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	710	120	0	267	759
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	772	130	0	290	825
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1132				
pX, platoon unblocked					0.96	
vC, conflicting volume	130				902	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130				879	130
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				5	10
cM capacity (veh/h)	1455				306	919

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	772	130	290	825
Volume Left	0	0	290	0
Volume Right	0	0	0	825
cSH	1700	1700	306	919
Volume to Capacity	0.45	0.08	0.95	0.90
Queue Length 95th (ft)	0	0	237	317
Control Delay (s)	0.0	0.0	76.8	31.8
Lane LOS			F	D
Approach Delay (s)	0.0	0.0	43.5	
Approach LOS			E	

Intersection Summary			
Average Delay	24.1		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
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	271	335	102	412	0	0	0	0	170	452	575
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	295	364	111	448	0	0	0	0	185	491	625
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				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	448			659			1168	1146	477	1146	1328	224
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	448			624			1154	1132	435	1132	1321	224
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			88			0	100	100	0	0	20
cM capacity (veh/h)	1109			915			0	170	547	138	131	779

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	659	260	299	884	417
Volume Left	0	111	0	185	0
Volume Right	364	0	0	208	417
cSH	1700	915	1700	165	779
Volume to Capacity	0.39	0.12	0.18	5.35	0.53
Queue Length 95th (ft)	0	10	0	Err	80
Control Delay (s)	0.0	4.8	0.0	Err	14.8
Lane LOS		A		F	B
Approach Delay (s)	0.0	2.2		6801.6	
Approach LOS				F	

Intersection Summary			
Average Delay	3514.3		
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
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	195	591	275	463	0	0	0	0	91	655	693
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	212	642	299	503	0	0	0	0	99	712	753
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				0.87			0.87	0.87	0.87	0.87	0.87	
vC, conflicting volume	503			854			1739	1634	533	1634	1955	252
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	503			761			1773	1654	393	1654	2021	252
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			60			0	100	100	0	0	0
cM capacity (veh/h)	1057			740			0	51	529	39	30	748

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	854	467	336	1062	502
Volume Left	0	299	0	99	0
Volume Right	642	0	0	251	502
cSH	1700	740	1700	40	748
Volume to Capacity	0.50	0.40	0.20	26.71	0.67
Queue Length 95th (ft)	0	49	0	Err	131
Control Delay (s)	0.0	10.5	0.0	Err	19.1
Lane LOS		B		F	C
Approach Delay (s)	0.0	6.1		6794.9	
Approach LOS				F	

Intersection Summary			
Average Delay	3301.5		
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
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)	316	0	317	0	0	0	0	988	223	226	551	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						0.97		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583						3442		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.17	1.00	
Satd. Flow (perm)	1770	1583						3442		323	3539	
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)	343	0	345	0	0	0	0	1074	242	246	599	0
RTOR Reduction (vph)	0	279	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	343	66	0	0	0	0	0	1300	0	246	599	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	22.8	22.8						87.8		87.8	87.8	
Effective Green, g (s)	22.8	22.8						87.8		87.8	87.8	
Actuated g/C Ratio	0.19	0.19						0.73		0.73	0.73	
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)	336	301						2518		236	2589	
v/s Ratio Prot	c0.19	0.04						0.38			0.17	
v/s Ratio Perm										c0.76		
v/c Ratio	1.02	0.22						0.52		1.04	0.23	
Uniform Delay, d1	48.6	41.1						6.9		16.1	5.2	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	54.5	0.8						0.1		70.1	0.0	
Delay (s)	103.1	41.9						7.0		86.2	5.2	
Level of Service	F	D						A		F	A	
Approach Delay (s)		72.4			0.0			7.0			28.8	
Approach LOS		E			A			A			C	

Intersection Summary

HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
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)	160	6	535	0	0	0	0	1069	183	442	1252	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						0.98		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	1587						3462		1770	3539	
Flt Permitted	0.95	1.00						1.00		0.16	1.00	
Satd. Flow (perm)	1770	1587						3462		302	3539	
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)	174	7	582	0	0	0	0	1162	199	480	1361	0
RTOR Reduction (vph)	0	76	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	174	513	0	0	0	0	0	1352	0	480	1361	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	29.8	29.8						110.8		110.8	110.8	
Effective Green, g (s)	29.8	29.8						110.8		110.8	110.8	
Actuated g/C Ratio	0.20	0.20						0.74		0.74	0.74	
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)	352	315						2557		223	2614	
v/s Ratio Prot	0.10	c0.32						0.39			0.38	
v/s Ratio Perm										c1.59		
v/c Ratio	0.49	1.63						0.53		2.15	0.52	
Uniform Delay, d1	53.4	60.1						8.4		19.6	8.3	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.4	296.8						0.1		533.3	0.1	
Delay (s)	55.8	356.9						8.5		552.9	8.4	
Level of Service	E	F						A		F	A	
Approach Delay (s)		288.2			0.0			8.5			150.4	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	128.2	HCM Level of Service	F
HCM Volume to Capacity ratio	2.04		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
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	115	24	426	386	922	0	0	672	214
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	125	26	463	420	1002	0	0	730	233
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	2663	2688	482	2207	2804	501	963			1002		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2663	2688	482	2207	2804	501	963			1002		
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 %	0	100	100	0	0	10	41			100		
cM capacity (veh/h)	0	9	531	13	7	515	710			687		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	138	476	420	501	501	487	476
Volume Left	125	0	420	0	0	0	0
Volume Right	0	463	0	0	0	0	233
cSH	12	178	710	1700	1700	1700	1700
Volume to Capacity	11.38	2.67	0.59	0.29	0.29	0.29	0.28
Queue Length 95th (ft)	Err	1038	98	0	0	0	0
Control Delay (s)	Err	807.9	17.1	0.0	0.0	0.0	0.0
Lane LOS	F	F	C				
Approach Delay (s)	2873.9		5.0			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	590.9		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
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	300	5	374	314	913	0	0	1321	408
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	326	5	407	341	992	0	0	1436	443
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	0.85	0.85	0.79	0.85	0.85	0.87	0.79			0.87		
vC, conflicting volume	3246	3333	940	2393	3554	496	1879			992		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2605	2707	391	1607	2967	124	1581			694		
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 %	0	0	100	0	0	48	0			100		
cM capacity (veh/h)	0	0	480	0	0	787	325			781		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	329	409	341	496	496	957	922
Volume Left	326	0	341	0	0	0	0
Volume Right	0	407	0	0	0	0	443
cSH	0	0	325	1700	1700	1700	1700
Volume to Capacity	Err	Err	1.05	0.29	0.29	0.56	0.54
Queue Length 95th (ft)	Err	Err	309	0	0	0	0
Control Delay (s)	Err	Err	100.1	0.0	0.0	0.0	0.0
Lane LOS	F	F	F				
Approach Delay (s)	Err		25.6			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
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	38	49	19	13	190	1147	3	1	810	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	23	4	41	53	21	14	207	1247	3	1	880	33
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	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1960	2562	457	2147	2577	625	913			1250		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1923	2546	366	2117	2562	625	839			1250		
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 %	0	77	93	0	0	97	73			100		
cM capacity (veh/h)	0	19	609	17	18	428	764			553		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	68	88	830	627	441	473
Volume Left	23	53	207	0	1	0
Volume Right	41	14	0	3	0	33
cSH	0	20	764	1700	553	1700
Volume to Capacity	Err	4.31	0.27	0.37	0.00	0.28
Queue Length 95th (ft)	Err	Err	27	0	0	0
Control Delay (s)	Err	Err	6.5	0.0	0.1	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	Err	Err	3.7		0.0	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
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	5	93	250	162	153	274	994	82	6	1229	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	36	5	101	272	176	166	298	1080	89	7	1336	33
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	0.77	0.77	0.73	0.77	0.77	0.91	0.73			0.91		
vC, conflicting volume	2755	3130	684	2505	3102	585	1368			1170		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2143	2627	0	1821	2591	337	759			982		
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 %	0	42	87	0	0	72	52			99		
cM capacity (veh/h)	0	9	790	11	10	598	618			634		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	142	614	838	629	674	701
Volume Left	36	272	298	0	7	0
Volume Right	101	166	0	89	0	33
cSH	0	15	618	1700	634	1700
Volume to Capacity	Err	41.98	0.48	0.37	0.01	0.41
Queue Length 95th (ft)	Err	Err	66	0	1	0
Control Delay (s)	Err	Err	13.1	0.0	0.3	0.0
Lane LOS	F	F	B		A	
Approach Delay (s)	Err	Err	7.5		0.1	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	121.5%	ICU Level of Service	H
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: G St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	34	82	29	50	107	72	41	1043	48	38	741	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)	4.5	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	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.94		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	1789		1770	1750		1770	3516		1770	3515	
Flt Permitted	0.63	1.00		0.68	1.00		0.30	1.00		0.18	1.00	
Satd. Flow (perm)	1178	1789		1265	1750		561	3516		332	3515	
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)	37	89	32	54	116	78	45	1134	52	41	805	39
RTOR Reduction (vph)	0	24	0	0	42	0	0	5	0	0	6	0
Lane Group Flow (vph)	37	97	0	54	152	0	45	1181	0	41	838	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	13.0	13.0		13.0	13.0		29.1	29.1		29.1	29.1	
Effective Green, g (s)	13.0	13.0		13.0	13.0		29.1	29.1		29.1	29.1	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	301	458		324	448		321	2014		190	2014	
v/s Ratio Prot		0.05			c0.09			c0.34			0.24	
v/s Ratio Perm	0.03			0.04			0.08			0.12		
v/c Ratio	0.12	0.21		0.17	0.34		0.14	0.59		0.22	0.42	
Uniform Delay, d1	14.5	14.9		14.7	15.4		5.0	7.0		5.3	6.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5		0.5	0.9		0.4	0.7		1.2	0.3	
Delay (s)	14.9	15.4		15.2	16.3		5.5	7.7		6.5	6.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		15.3			16.1			7.6			6.4	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	8.7
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: G St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	130	147	88	69	255	88	105	978	54	99	1101	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)	4.5	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	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.96		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	1758		1770	1791		1770	3511		1770	3471	
Flt Permitted	0.38	1.00		0.55	1.00		0.14	1.00		0.17	1.00	
Satd. Flow (perm)	716	1758		1017	1791		263	3511		325	3471	
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)	141	160	96	75	277	96	114	1063	59	108	1197	176
RTOR Reduction (vph)	0	32	0	0	23	0	0	7	0	0	21	0
Lane Group Flow (vph)	141	224	0	75	350	0	114	1115	0	108	1352	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	18.0	18.0		18.0	18.0		28.3	28.3		28.3	28.3	
Effective Green, g (s)	18.0	18.0		18.0	18.0		28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.2	4.2		4.2	4.2	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	234	575		333	586		135	1807		167	1786	
v/s Ratio Prot		0.13			0.20			0.32			0.39	
v/s Ratio Perm	c0.20			0.07			c0.43			0.33		
v/c Ratio	0.60	0.39		0.23	0.60		0.84	0.62		0.65	0.76	
Uniform Delay, d1	15.5	14.3		13.4	15.5		11.5	9.5		9.7	10.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	0.9		0.7	2.5		38.6	0.9		11.2	2.2	
Delay (s)	21.8	15.2		14.2	17.9		50.1	10.4		20.9	12.9	
Level of Service	C	B		B	B		D	B		C	B	
Approach Delay (s)		17.5			17.3			14.1			13.5	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
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)	221	501	49	326	553	28	27	711	383	57	715	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)	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	0.99		1.00	0.99		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	3492		1770	1849		1770	3353		1770	3499	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3492		1770	1849		1770	3353		1770	3499	
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)	240	545	53	354	601	30	29	773	416	62	777	64
RTOR Reduction (vph)	0	5	0	0	1	0	0	49	0	0	4	0
Lane Group Flow (vph)	240	593	0	354	630	0	29	1140	0	62	837	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	23.8	23.8		46.5	46.5		4.7	48.2		6.3	49.8	
Effective Green, g (s)	23.8	23.8		46.5	46.5		4.7	48.2		6.3	49.8	
Actuated g/C Ratio	0.17	0.17		0.32	0.32		0.03	0.33		0.04	0.35	
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)	292	576		571	596		58	1121		77	1208	
v/s Ratio Prot	0.14	c0.17		0.20	c0.34		0.02	c0.34		c0.04	0.24	
v/s Ratio Perm												
v/c Ratio	0.82	1.03		0.62	1.06		0.50	1.02		0.81	0.69	
Uniform Delay, d1	58.2	60.2		41.4	48.8		68.6	48.0		68.3	40.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.0	45.3		1.4	52.7		2.5	31.3		41.9	1.4	
Delay (s)	74.2	105.5		42.8	101.5		71.1	79.3		110.2	42.0	
Level of Service	E	F		D	F		E	E		F	D	
Approach Delay (s)		96.5			80.4			79.1			46.7	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	75.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	144.2	Sum of lost time (s)	19.4
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
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)	197	769	79	273	386	57	154	815	342	121	996	127
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	0.99		1.00	0.98		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	3490		1770	1827		1770	3382		1770	3479	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3490		1770	1827		1770	3382		1770	3479	
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)	214	836	86	297	420	62	167	886	372	132	1083	138
RTOR Reduction (vph)	0	5	0	0	4	0	0	34	0	0	7	0
Lane Group Flow (vph)	214	917	0	297	478	0	167	1224	0	132	1214	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	30.4	30.4		31.4	31.4		10.0	45.8		8.0	43.8	
Effective Green, g (s)	30.4	30.4		31.4	31.4		10.0	45.8		8.0	43.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.07	0.34		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)	399	786		412	425		131	1147		105	1129	
v/s Ratio Prot	0.12	c0.26		0.17	c0.26		c0.09	c0.36		0.07	0.35	
v/s Ratio Perm												
v/c Ratio	0.54	1.17		0.72	1.13		1.27	1.07		1.26	1.07	
Uniform Delay, d1	46.1	52.3		47.8	51.8		62.5	44.6		63.5	45.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	88.4		5.2	82.3		170.0	46.3		172.1	49.3	
Delay (s)	46.8	140.7		53.0	134.1		232.5	90.9		235.6	94.9	
Level of Service	D	F		D	F		F	F		F	F	
Approach Delay (s)		123.0			103.2			107.5			108.7	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	110.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
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)	32	191	56	254	465	194	61	706	159	189	543	104
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		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		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	3419		1770	3383		1770	3442		1770	3454	
Flt Permitted	0.23	1.00		0.59	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	435	3419		1092	3383		1770	3442		1770	3454	
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)	35	208	61	276	505	211	66	767	173	205	590	113
RTOR Reduction (vph)	0	42	0	0	72	0	0	29	0	0	22	0
Lane Group Flow (vph)	35	227	0	276	644	0	66	911	0	205	681	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	20.0	20.0		20.0	20.0		5.0	23.7		8.8	27.5	
Effective Green, g (s)	20.0	20.0		20.0	20.0		5.0	23.7		8.8	27.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.08	0.37		0.14	0.42	
Clearance Time (s)	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		2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	134	1054		337	1043		136	1257		240	1464	
v/s Ratio Prot		0.07			0.19		0.04	c0.26		c0.12	0.20	
v/s Ratio Perm	0.08			c0.25								
v/c Ratio	0.26	0.22		0.82	0.62		0.49	0.72		0.85	0.47	
Uniform Delay, d1	16.9	16.6		20.8	19.2		28.7	17.8		27.4	13.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.2		15.9	1.5		1.0	2.5		23.6	0.5	
Delay (s)	18.9	16.8		36.6	20.7		29.7	20.3		51.0	13.9	
Level of Service	B	B		D	C		C	C		D	B	
Approach Delay (s)		17.1			25.1			20.9			22.3	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
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)	148	438	101	480	481	176	58	862	171	97	707	86
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		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.96		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	3440		1770	3397		1770	3451		1770	3482	
Flt Permitted	0.32	1.00		0.38	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	598	3440		713	3397		1770	3451		1770	3482	
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)	161	476	110	522	523	191	63	937	186	105	768	93
RTOR Reduction (vph)	0	14	0	0	25	0	0	11	0	0	6	0
Lane Group Flow (vph)	161	572	0	522	689	0	63	1112	0	105	855	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	84.8	84.8		84.8	84.8		9.6	41.6		12.0	44.0	
Effective Green, g (s)	84.8	84.8		84.8	84.8		9.6	41.6		12.0	44.0	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.06	0.28		0.08	0.29	
Clearance Time (s)	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		2.0	4.8		2.0	4.8	
Lane Grp Cap (vph)	336	1934		401	1910		113	952		141	1016	
v/s Ratio Prot		0.17			0.20		0.04	c0.32		0.06	c0.25	
v/s Ratio Perm	0.27			c0.73								
v/c Ratio	0.48	0.30		1.30	0.36		0.56	1.17		0.74	0.84	
Uniform Delay, d1	19.8	17.3		33.0	18.1		68.5	54.6		67.9	50.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.2		153.0	0.2		3.4	87.1		16.9	7.0	
Delay (s)	21.9	17.5		186.0	18.3		71.9	141.7		84.8	57.1	
Level of Service	C	B		F	B		E	F		F	E	
Approach Delay (s)		18.4			89.1			138.0			60.1	
Approach LOS		B			F			F			E	

Intersection Summary

HCM Average Control Delay	83.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
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)	37	440	151	0	0	0	0	833	98	24	766	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					0.98		1.00	1.00	
Flt Protected		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5066	1583					3483		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.20	1.00	
Satd. Flow (perm)		5066	1583					3483		368	3539	
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)	40	478	164	0	0	0	0	905	107	26	833	0
RTOR Reduction (vph)	0	0	69	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	518	95	0	0	0	0	997	0	26	833	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		20.0	20.0					25.6		25.6	25.6	
Effective Green, g (s)		20.0	20.0					25.6		25.6	25.6	
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)		1876	586					1651		174	1678	
v/s Ratio Prot		c0.10						c0.29			0.24	
v/s Ratio Perm			0.06							0.07		
v/c Ratio		0.28	0.16					0.60		0.15	0.50	
Uniform Delay, d1		11.9	11.4					10.5		8.0	9.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.4		0.1	0.1	
Delay (s)		12.0	11.4					10.9		8.2	9.9	
Level of Service		B	B					B		A	A	
Approach Delay (s)		11.8			0.0			10.9			9.8	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	49.8%	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)	150	1766	46	0	0	0	0	1124	48	73	913	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		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5065	1583					3518		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.15	1.00	
Satd. Flow (perm)		5065	1583					3518		274	3539	
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)	163	1920	50	0	0	0	0	1222	52	79	992	0
RTOR Reduction (vph)	0	0	20	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2083	30	0	0	0	0	1272	0	79	992	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		28.8	28.8					27.2		27.2	27.2	
Effective Green, g (s)		28.8	28.8					27.2		27.2	27.2	
Actuated g/C Ratio		0.45	0.45					0.42		0.42	0.42	
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)		2265	708					1486		116	1495	
v/s Ratio Prot		c0.41						c0.36			0.28	
v/s Ratio Perm			0.02							0.29		
v/c Ratio		0.92	0.04					0.86		0.68	0.66	
Uniform Delay, d1		16.7	10.0					16.8		15.1	14.9	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		6.5	0.0					4.9		12.3	0.9	
Delay (s)		23.2	10.0					21.7		27.4	15.8	
Level of Service		C	B					C		C	B	
Approach Delay (s)		22.9			0.0			21.7			16.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
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)	79	43	37	154	324	17	85	723	4	25	696	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	4.0	4.2	4.2	4.0	4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	0.97	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	3433	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	3433	1863	1583	1770	3539	1583	1770	3539	1583
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)	86	47	40	167	352	18	92	786	4	27	757	40
RTOR Reduction (vph)	0	0	35	0	0	13	0	0	3	0	0	28
Lane Group Flow (vph)	86	47	5	167	352	5	92	786	1	27	757	12
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)	8.5	8.5	8.5	18.6	18.6	18.6	5.6	25.0	25.0	2.4	21.8	21.8
Effective Green, g (s)	8.5	8.5	8.5	18.6	18.6	18.6	5.6	25.0	25.0	2.4	21.8	21.8
Actuated g/C Ratio	0.12	0.12	0.12	0.26	0.26	0.26	0.08	0.35	0.35	0.03	0.31	0.31
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)	212	223	189	898	487	414	139	1244	557	60	1085	485
v/s Ratio Prot	c0.05	0.03		0.05	c0.19		c0.05	c0.22		0.02	0.21	
v/s Ratio Perm			0.00			0.00			0.00			0.01
v/c Ratio	0.41	0.21	0.03	0.19	0.72	0.01	0.66	0.63	0.00	0.45	0.70	0.03
Uniform Delay, d1	29.0	28.3	27.6	20.4	23.9	19.4	31.8	19.2	15.0	33.7	21.7	17.2
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	2.5	1.0	0.1	0.2	6.3	0.0	8.8	1.4	0.0	1.9	2.5	0.0
Delay (s)	31.5	29.2	27.8	20.6	30.2	19.5	40.6	20.7	15.0	35.7	24.2	17.3
Level of Service	C	C	C	C	C	B	D	C	B	D	C	B
Approach Delay (s)		30.0			26.9			22.7			24.2	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	16.6
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
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)	183	303	162	97	265	47	58	1139	68	67	758	47
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	0.97	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	3433	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	3433	1863	1583	1770	3539	1583	1770	3539	1583
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)	199	329	176	105	288	51	63	1238	74	73	824	51
RTOR Reduction (vph)	0	0	65	0	0	41	0	0	32	0	0	30
Lane Group Flow (vph)	199	329	111	105	288	10	63	1238	42	73	824	21
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)	20.2	20.2	20.2	19.4	19.4	19.4	9.1	29.3	29.3	9.1	29.3	29.3
Effective Green, g (s)	20.2	20.2	20.2	19.4	19.4	19.4	9.1	29.3	29.3	9.1	29.3	29.3
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.10	0.31	0.31	0.10	0.31	0.31
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)	378	398	338	704	382	325	170	1096	490	170	1096	490
v/s Ratio Prot	0.11	c0.18		0.03	c0.15		0.04	c0.35		c0.04	0.23	
v/s Ratio Perm			0.07			0.01			0.03			0.01
v/c Ratio	0.53	0.83	0.33	0.15	0.75	0.03	0.37	1.13	0.08	0.43	0.75	0.04
Uniform Delay, d1	33.0	35.5	31.5	30.8	35.4	30.1	40.1	32.6	23.1	40.3	29.4	22.8
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	2.4	14.5	1.1	0.2	9.6	0.1	0.5	70.2	0.2	0.6	3.5	0.1
Delay (s)	35.4	50.1	32.6	31.0	44.9	30.2	40.6	102.8	23.3	40.9	32.9	22.9
Level of Service	D	D	C	C	D	C	D	F	C	D	C	C
Approach Delay (s)		41.6			40.0			95.7			32.9	
Approach LOS		D			D			F			C	

Intersection Summary

HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	16.6
Intersection Capacity Utilization	81.3%	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)	0	0	0	35	104	112	162	654	0	0	740	406
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					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					0.99	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					3495	1583	1770	3539			3539	1583
Flt Permitted					0.99	1.00	0.34	1.00			1.00	1.00
Satd. Flow (perm)					3495	1583	642	3539			3539	1583
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)	0	0	0	38	113	122	176	711	0	0	804	441
RTOR Reduction (vph)	0	0	0	0	0	102	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	0	0	151	20	176	711	0	0	804	272
Turn Type				Split		Perm	Perm					Perm
Protected Phases				8	8			2			6	
Permitted Phases						8	2					6
Actuated Green, G (s)					6.0	6.0	23.1	23.1			23.1	23.1
Effective Green, g (s)					6.0	6.0	23.1	23.1			23.1	23.1
Actuated g/C Ratio					0.16	0.16	0.62	0.62			0.62	0.62
Clearance Time (s)					4.2	4.2	4.2	4.2			4.2	4.2
Vehicle Extension (s)					2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)					559	253	395	2180			2180	975
v/s Ratio Prot					c0.04			0.20			0.23	
v/s Ratio Perm						0.01	c0.27					0.17
v/c Ratio					0.27	0.08	0.45	0.33			0.37	0.28
Uniform Delay, d1					13.8	13.4	3.8	3.5			3.6	3.3
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.1	0.0	0.3	0.0			0.0	0.1
Delay (s)					13.9	13.4	4.1	3.5			3.6	3.4
Level of Service					B	B	A	A			A	A
Approach Delay (s)		0.0			13.7			3.6			3.5	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: P St & Ventura Ave

4/9/2012

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (vph)	31	168	254	0	0	231	1144	0	0	843	441
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)		4.2	4.2			4.2	4.2			4.2	4.2
Lane Util. Factor		0.97	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)		3433	1583			1770	3539			3539	1583
Flt Permitted		0.95	1.00			0.28	1.00			1.00	1.00
Satd. Flow (perm)		3433	1583			522	3539			3539	1583
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
Adj. Flow (vph)	34	183	276	0	0	251	1243	0	0	916	479
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	163
Lane Group Flow (vph)	0	217	214	0	0	251	1243	0	0	916	316
Turn Type	Split		Perm			Perm					Perm
Protected Phases	8	8					2			6	
Permitted Phases			8			2					6
Actuated Green, G (s)		13.4	13.4			37.6	37.6			37.6	37.6
Effective Green, g (s)		13.4	13.4			37.6	37.6			37.6	37.6
Actuated g/C Ratio		0.23	0.23			0.63	0.63			0.63	0.63
Clearance Time (s)		4.2	4.2			4.2	4.2			4.2	4.2
Vehicle Extension (s)		2.0	2.0			2.0	2.0			2.0	2.0
Lane Grp Cap (vph)		774	357			330	2240			2240	1002
v/s Ratio Prot		0.06					0.35			0.26	
v/s Ratio Perm			c0.14			c0.48					0.20
v/c Ratio		0.28	0.60			0.76	0.55			0.41	0.32
Uniform Delay, d1		19.0	20.6			7.7	6.2			5.4	5.0
Progression Factor		1.00	1.00			1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1	1.8			9.0	0.2			0.0	0.1
Delay (s)		19.1	22.4			16.7	6.3			5.4	5.1
Level of Service		B	C			B	A			A	A
Approach Delay (s)		20.9		0.0			8.1			5.3	
Approach LOS		C		A			A			A	

Intersection Summary

HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
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)	124	596	7	12	1079	153	14	142	5	183	128	261
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	0.91		1.00	0.91	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	1.00		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	5076		1770	5085	1583	1770	3523		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.67	1.00		0.65	1.00	1.00
Satd. Flow (perm)	1770	5076		1770	5085	1583	1245	3523		1213	1863	1583
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)	135	648	8	13	1173	166	15	154	5	199	139	284
RTOR Reduction (vph)	0	1	0	0	0	66	0	4	0	0	0	203
Lane Group Flow (vph)	135	655	0	13	1173	100	15	155	0	199	139	81
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)	7.1	34.7		1.0	28.6	28.6	15.2	15.2		15.2	15.2	15.2
Effective Green, g (s)	7.1	34.7		1.0	28.6	28.6	15.2	15.2		15.2	15.2	15.2
Actuated g/C Ratio	0.11	0.54		0.02	0.45	0.45	0.24	0.24		0.24	0.24	0.24
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)	196	2748		28	2269	706	295	835		288	442	375
v/s Ratio Prot	c0.08	0.13		0.01	c0.23			0.04			0.07	
v/s Ratio Perm						0.06	0.01			c0.16		0.05
v/c Ratio	0.69	0.24		0.46	0.52	0.14	0.05	0.19		0.69	0.31	0.22
Uniform Delay, d1	27.4	7.7		31.3	12.8	10.5	18.9	19.5		22.3	20.2	19.7
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	7.8	0.0		4.4	0.1	0.0	0.0	0.0		5.7	0.1	0.1
Delay (s)	35.2	7.8		35.7	12.9	10.5	18.9	19.6		28.0	20.3	19.8
Level of Service	D	A		D	B	B	B	B		C	C	B
Approach Delay (s)		12.4			12.8			19.5			22.5	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
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)	288	1555	17	39	1318	468	26	312	28	408	294	322
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	0.91		1.00	0.91	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	5077		1770	5085	1583	1770	3496		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.45	1.00		0.50	1.00	1.00
Satd. Flow (perm)	1770	5077		1770	5085	1583	843	3496		935	1863	1583
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)	313	1690	18	42	1433	509	28	339	30	443	320	350
RTOR Reduction (vph)	0	1	0	0	0	160	0	7	0	0	0	163
Lane Group Flow (vph)	313	1707	0	42	1433	349	28	362	0	443	320	187
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)	13.0	37.6		4.4	29.0	29.0	36.4	36.4		36.4	36.4	36.4
Effective Green, g (s)	13.0	37.6		4.4	29.0	29.0	36.4	36.4		36.4	36.4	36.4
Actuated g/C Ratio	0.14	0.41		0.05	0.32	0.32	0.40	0.40		0.40	0.40	0.40
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)	251	2084		85	1610	501	335	1389		372	740	629
v/s Ratio Prot	c0.18	0.34		0.02	c0.28			0.10			0.17	
v/s Ratio Perm						0.22	0.03			c0.47		0.12
v/c Ratio	1.25	0.82		0.49	0.89	0.70	0.08	0.26		1.19	0.43	0.30
Uniform Delay, d1	39.3	24.0		42.5	29.8	27.4	17.2	18.6		27.6	20.1	18.9
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	139.9	2.5		1.6	6.4	3.4	0.0	0.0		109.6	0.1	0.1
Delay (s)	179.2	26.5		44.2	36.2	30.8	17.2	18.6		137.2	20.2	19.0
Level of Service	F	C		D	D	C	B	B		F	C	B
Approach Delay (s)		50.1			35.0			18.5			66.4	
Approach LOS		D			D			B			E	

Intersection Summary

HCM Average Control Delay	45.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
15: G St & Inyo St

4/9/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	146	0	18	171	16	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	159	0	20	186	17	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)	484			1038		
pX, platoon unblocked						
vC, conflicting volume			159		384	159
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			159		384	159
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		97	100
cM capacity (veh/h)			1421		611	887

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	159	205	22
Volume Left	0	20	17
Volume Right	0	0	4
cSH	1700	1421	651
Volume to Capacity	0.09	0.01	0.03
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.8	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.7
Approach LOS			B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
15: G St & Inyo St

4/9/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	363	0	22	514	27	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	395	0	24	559	29	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)	484			1038		
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			395		1001	395
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			306		961	306
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		89	99
cM capacity (veh/h)			1162		258	680

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	395	583	37
Volume Left	0	24	29
Volume Right	0	0	8
cSH	1700	1162	296
Volume to Capacity	0.23	0.02	0.13
Queue Length 95th (ft)	0	2	11
Control Delay (s)	0.0	0.6	18.9
Lane LOS		A	C
Approach Delay (s)	0.0	0.6	18.9
Approach LOS			C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	54.9%	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	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (vph)	632	102	176	161	7	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.2	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	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	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	687	111	191	175	8	249
RTOR Reduction (vph)	0	0	0	143	0	217
Lane Group Flow (vph)	687	111	191	32	8	32
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	29.1	44.3	11.2	11.2	7.7	7.7
Effective Green, g (s)	29.1	44.3	11.2	11.2	7.7	7.7
Actuated g/C Ratio	0.48	0.73	0.19	0.19	0.13	0.13
Clearance Time (s)	4.0	4.2	4.2	4.2	4.2	4.2
Vehicle Extension (s)	3.0	4.8	4.8	4.8	2.0	2.0
Lane Grp Cap (vph)	853	2596	656	294	226	202
v/s Ratio Prot	c0.39	0.03	c0.05		0.00	
v/s Ratio Perm				0.02		c0.02
v/c Ratio	0.81	0.04	0.29	0.11	0.04	0.16
Uniform Delay, d1	13.3	2.2	21.2	20.5	23.1	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.0	0.5	0.3	0.0	0.1
Delay (s)	18.8	2.2	21.7	20.8	23.1	23.6
Level of Service	B	A	C	C	C	C
Approach Delay (s)		16.5	21.2		23.6	
Approach LOS		B	C		C	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (vph)	500	211	109	89	91	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2	4.2	4.2	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	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	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	543	229	118	97	99	546
RTOR Reduction (vph)	0	0	0	84	0	451
Lane Group Flow (vph)	543	229	118	13	99	95
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	25.2	36.4	7.2	7.2	9.4	9.4
Effective Green, g (s)	25.2	36.4	7.2	7.2	9.4	9.4
Actuated g/C Ratio	0.46	0.67	0.13	0.13	0.17	0.17
Clearance Time (s)	4.0	4.2	4.2	4.2	4.2	4.2
Vehicle Extension (s)	3.0	4.8	4.8	4.8	2.0	2.0
Lane Grp Cap (vph)	823	2377	470	210	307	275
v/s Ratio Prot	c0.31	0.06	c0.03		0.06	
v/s Ratio Perm				0.01		c0.06
v/c Ratio	0.66	0.10	0.25	0.06	0.32	0.34
Uniform Delay, d1	11.2	3.1	21.1	20.5	19.6	19.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.5	0.2	0.2	0.3
Delay (s)	13.1	3.2	21.6	20.8	19.8	20.0
Level of Service	B	A	C	C	B	B
Approach Delay (s)		10.2	21.2		19.9	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.4
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
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)	5	222	48	141	455	54	98	205	77	13	111	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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		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	3445		1770	3483		1770	1786		1770	1828	
Flt Permitted	0.42	1.00		0.57	1.00		0.67	1.00		0.50	1.00	
Satd. Flow (perm)	775	3445		1067	3483		1246	1786		929	1828	
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)	5	241	52	153	495	59	107	223	84	14	121	17
RTOR Reduction (vph)	0	28	0	0	16	0	0	22	0	0	9	0
Lane Group Flow (vph)	5	265	0	153	538	0	107	285	0	14	129	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	26.0	26.0		26.0	26.0		22.0	22.0		22.0	22.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0		22.0	22.0		22.0	22.0	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.39	0.39		0.39	0.39	
Clearance Time (s)	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	
Lane Grp Cap (vph)	357	1588		492	1606		486	697		362	713	
v/s Ratio Prot		0.08			c0.15			c0.16			0.07	
v/s Ratio Perm	0.01			0.14			0.09			0.02		
v/c Ratio	0.01	0.17		0.31	0.34		0.22	0.41		0.04	0.18	
Uniform Delay, d1	8.2	8.9		9.6	9.7		11.5	12.5		10.7	11.3	
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		0.1	0.0		0.1	0.1		0.0	0.0	
Delay (s)	8.3	8.9		9.7	9.7		11.6	12.6		10.7	11.3	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		8.9			9.7			12.3			11.3	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	8.4
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
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)	84	425	113	66	361	114	74	265	50	99	411	184
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.98		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	3428		1770	3412		1770	1819		1770	1776	
Flt Permitted	0.44	1.00		0.39	1.00		0.17	1.00		0.46	1.00	
Satd. Flow (perm)	813	3428		732	3412		323	1819		861	1776	
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)	91	462	123	72	392	124	80	288	54	108	447	200
RTOR Reduction (vph)	0	41	0	0	51	0	0	11	0	0	26	0
Lane Group Flow (vph)	91	544	0	72	465	0	80	331	0	108	621	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	26.0	26.0		26.0	26.0		23.1	23.1		23.1	23.1	
Effective Green, g (s)	26.0	26.0		26.0	26.0		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.40	0.40		0.40	0.40	
Clearance Time (s)	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	
Lane Grp Cap (vph)	368	1550		331	1543		130	731		346	713	
v/s Ratio Prot		c0.16			0.14			0.18			c0.35	
v/s Ratio Perm	0.11			0.10			0.25			0.13		
v/c Ratio	0.25	0.35		0.22	0.30		0.62	0.45		0.31	0.87	
Uniform Delay, d1	9.7	10.3		9.6	10.0		13.7	12.6		11.8	15.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.0		6.0	0.2		0.2	10.9	
Delay (s)	9.8	10.3		9.7	10.0		19.6	12.7		12.0	26.8	
Level of Service	A	B		A	B		B	B		B	C	
Approach Delay (s)		10.2			10.0			14.0			24.6	
Approach LOS		B			A			B			C	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
18: M St & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	459	75	0	0	0	0	61	71	59	203	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		0.98						0.93		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		4969						1727		1770	1863	
Flt Permitted		1.00						1.00		0.67	1.00	
Satd. Flow (perm)		4969						1727		1240	1863	
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)	39	499	82	0	0	0	0	66	77	64	221	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	587	0	0	0	0	0	91	0	64	221	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		24.8						16.6		16.6	16.6	
Effective Green, g (s)		24.8						16.6		16.6	16.6	
Actuated g/C Ratio		0.49						0.33		0.33	0.33	
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)		2445						569		408	614	
v/s Ratio Prot		c0.12						0.05			c0.12	
v/s Ratio Perm										0.05		
v/c Ratio		0.24						0.16		0.16	0.36	
Uniform Delay, d1		7.4						12.0		12.0	12.9	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.0						0.0		0.1	0.1	
Delay (s)		7.4						12.0		12.0	13.0	
Level of Service		A						B		B	B	
Approach Delay (s)		7.4			0.0			12.0			12.8	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	50.4	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

HCM Signalized Intersection Capacity Analysis
18: M St & Inyo St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	109	1362	252	0	0	0	0	292	294	81	391	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		0.98						0.93		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		4958						1736		1770	1863	
Flt Permitted		1.00						1.00		0.18	1.00	
Satd. Flow (perm)		4958						1736		342	1863	
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)	118	1480	274	0	0	0	0	317	320	88	425	0
RTOR Reduction (vph)	0	44	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1828	0	0	0	0	0	632	0	88	425	0
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		23.0						23.0		23.0	23.0	
Effective Green, g (s)		23.0						23.0		23.0	23.0	
Actuated g/C Ratio		0.42						0.42		0.42	0.42	
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)		2073						726		143	779	
v/s Ratio Prot		c0.37						c0.36			0.23	
v/s Ratio Perm										0.26		
v/c Ratio		0.88						0.87		0.62	0.55	
Uniform Delay, d1		14.7						14.6		12.5	12.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		4.7						10.8		5.4	0.4	
Delay (s)		19.4						25.5		18.0	12.5	
Level of Service		B						C		B	B	
Approach Delay (s)		19.4			0.0			25.5			13.4	
Approach LOS		B			A			C			B	

Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
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	127	444	17	14	9	0	0	19	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	138	483	18	15	10	0	0	21	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)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	501			0			535	777	0	773	768	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	501			0			535	777	0	773	768	251
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			91			96	97	100	100	93	99
cM capacity (veh/h)	1059			1622			376	299	1084	263	302	749

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	379	260	15	10	28
Volume Left	138	0	15	0	0
Volume Right	0	18	0	0	8
cSH	1622	1700	376	299	360
Volume to Capacity	0.09	0.15	0.04	0.03	0.08
Queue Length 95th (ft)	7	0	3	3	6
Control Delay (s)	3.2	0.0	15.0	17.5	15.8
Lane LOS	A		B	C	C
Approach Delay (s)	1.9		16.0		15.8
Approach LOS			C		C

Intersection Summary			
Average Delay	3.0		
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	283	559	38	101	25	0	0	18	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	308	608	41	110	27	0	0	20	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)		1000			1010							
pX, platoon unblocked												
vC, conflicting volume	649			0			933	1264	0	1257	1243	324
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	649			0			933	1264	0	1257	1243	324
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			81			35	80	100	100	86	99
cM capacity (veh/h)	933			1622			168	136	1084	93	140	671

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	611	345	110	27	24
Volume Left	308	0	110	0	0
Volume Right	0	41	0	0	4
cSH	1622	1700	168	136	164
Volume to Capacity	0.19	0.20	0.65	0.20	0.15
Queue Length 95th (ft)	17	0	93	18	12
Control Delay (s)	4.8	0.0	59.7	37.9	30.7
Lane LOS	A		F	E	D
Approach Delay (s)	3.1		55.4		30.7
Approach LOS			F		D

Intersection Summary				
Average Delay	10.1			
Intersection Capacity Utilization	97.9%	ICU Level of Service	F	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
20: G St & Kern St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	29	98	9	24	145	63	2	63	23	13	29	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)		4.8			4.8			4.8			4.8	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.99			0.96			0.96			0.99	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3466			3379			1795			1821	
Flt Permitted		0.84			0.91			1.00			1.00	
Satd. Flow (perm)		2960			3086			1797			1847	
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)	32	107	10	26	158	68	2	68	25	14	32	3
RTOR Reduction (vph)	0	7	0	0	50	0	0	23	0	0	3	0
Lane Group Flow (vph)	0	142	0	0	202	0	0	72	0	0	46	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		3.9			3.9			1.4			1.4	
Effective Green, g (s)		3.9			3.9			1.4			1.4	
Actuated g/C Ratio		0.26			0.26			0.09			0.09	
Clearance Time (s)		4.8			4.8			4.8			4.8	
Vehicle Extension (s)		0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)		775			808			169			174	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.07			c0.04			0.03	
v/c Ratio		0.18			0.25			0.43			0.27	
Uniform Delay, d1		4.3			4.3			6.4			6.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.1			0.6			0.3	
Delay (s)		4.3			4.4			7.0			6.6	
Level of Service		A			A			A			A	
Approach Delay (s)		4.3			4.4			7.0			6.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	14.9	Sum of lost time (s)	9.6
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: G St & Kern St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	19	267	104	110	413	13	153	204	116	30	294	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)		4.8			4.8			4.8			4.8	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.96			1.00			0.97			0.98	
Flt Protected		1.00			0.99			0.98			1.00	
Satd. Flow (prot)		3389			3491			1772			1824	
Flt Permitted		0.91			0.77			0.77			0.94	
Satd. Flow (perm)		3097			2725			1380			1723	
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)	21	290	113	120	449	14	166	222	126	33	320	50
RTOR Reduction (vph)	0	58	0	0	3	0	0	15	0	0	6	0
Lane Group Flow (vph)	0	366	0	0	580	0	0	499	0	0	397	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		15.2			15.2			24.4			24.4	
Effective Green, g (s)		15.2			15.2			24.4			24.4	
Actuated g/C Ratio		0.31			0.31			0.50			0.50	
Clearance Time (s)		4.8			4.8			4.8			4.8	
Vehicle Extension (s)		0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)		957			842			684			854	
v/s Ratio Prot												
v/s Ratio Perm		0.12			c0.21			c0.36			0.23	
v/c Ratio		0.38			0.69			0.73			0.46	
Uniform Delay, d1		13.3			14.9			9.8			8.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			1.9			3.5			0.1	
Delay (s)		13.4			16.8			13.3			8.3	
Level of Service		B			B			B			A	
Approach Delay (s)		13.4			16.8			13.3			8.3	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	9.6
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
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)	449	202	240	219	31	47
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	488	220	261	238	34	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)	537			471		
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			708		1239	354
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			611		1165	243
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			72		74	93
cM capacity (veh/h)			925		129	727

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	325	382	340	159	85
Volume Left	0	0	261	0	34
Volume Right	0	220	0	0	51
cSH	1700	1700	925	1700	256
Volume to Capacity	0.19	0.22	0.28	0.09	0.33
Queue Length 95th (ft)	0	0	29	0	35
Control Delay (s)	0.0	0.0	8.7	0.0	25.9
Lane LOS			A		D
Approach Delay (s)	0.0		5.9		25.9
Approach LOS					D

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

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)	656	62	39	569	109	77
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	713	67	42	618	118	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)	537			471		
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			780		1141	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			583		976	159
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		46	89
cM capacity (veh/h)			907		218	789

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	475	305	249	412	202
Volume Left	0	0	42	0	118
Volume Right	0	67	0	0	84
cSH	1700	1700	907	1700	311
Volume to Capacity	0.28	0.18	0.05	0.24	0.65
Queue Length 95th (ft)	0	0	4	0	106
Control Delay (s)	0.0	0.0	2.0	0.0	35.8
Lane LOS			A		E
Approach Delay (s)	0.0		0.7		35.8
Approach LOS					E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
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)	285	58	55	4	199	9	144	486	4	3	61	52
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	1.00		1.00	0.93	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765			1850		1770	1861		1770	1733	
Flt Permitted		0.63			0.99		0.68	1.00		0.31	1.00	
Satd. Flow (perm)		1154			1840		1263	1861		585	1733	
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)	310	63	60	4	216	10	157	528	4	3	66	57
RTOR Reduction (vph)	0	9	0	0	2	0	0	1	0	0	30	0
Lane Group Flow (vph)	0	424	0	0	228	0	157	531	0	3	93	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		25.9			25.9		31.2	31.2		31.2	31.2	
Effective Green, g (s)		25.9			25.9		31.2	31.2		31.2	31.2	
Actuated g/C Ratio		0.40			0.40		0.48	0.48		0.48	0.48	
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)		456			728		602	886		279	825	
v/s Ratio Prot								c0.29			0.05	
v/s Ratio Perm		c0.37			0.12		0.12			0.01		
v/c Ratio		0.93			0.31		0.26	0.60		0.01	0.11	
Uniform Delay, d1		18.9			13.7		10.3	12.6		9.0	9.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		25.0			0.1		0.1	0.7		0.0	0.0	
Delay (s)		43.9			13.7		10.3	13.3		9.0	9.5	
Level of Service		D			B		B	B		A	A	
Approach Delay (s)		43.9			13.7			12.6			9.5	
Approach LOS		D			B			B			A	

Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
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)	277	74	253	71	341	79	51	412	14	25	1473	172
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		0.94			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1809		1770	1854		1770	1834	
Flt Permitted		0.48			0.85		0.05	1.00		0.38	1.00	
Satd. Flow (perm)		837			1543		98	1854		705	1834	
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)	301	80	275	77	371	86	55	448	15	27	1601	187
RTOR Reduction (vph)	0	11	0	0	5	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	645	0	0	529	0	55	462	0	27	1785	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		55.8			55.8		75.8	75.8		75.8	75.8	
Effective Green, g (s)		55.8			55.8		75.8	75.8		75.8	75.8	
Actuated g/C Ratio		0.40			0.40		0.54	0.54		0.54	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)		334			615		53	1004		382	993	
v/s Ratio Prot								0.25			c0.97	
v/s Ratio Perm		c0.77			0.34		0.56			0.04		
v/c Ratio		1.93			0.86		1.04	0.46		0.07	1.80	
Uniform Delay, d1		42.1			38.5		32.1	19.6		15.3	32.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		429.3			11.4		134.7	0.1		0.0	362.9	
Delay (s)		471.4			50.0		166.8	19.7		15.3	395.0	
Level of Service		F			D		F	B		B	F	
Approach Delay (s)		471.4			50.0			35.3			389.3	
Approach LOS		F			D			D			F	

Intersection Summary

HCM Average Control Delay	301.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	159.8%	ICU Level of Service	H
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)	14	86	2	3	28	101	4	689	85	64	84	18
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			0.90		1.00	0.98		1.00	0.97	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1846			1668		1770	1832		1770	1812	
Flt Permitted		0.95			1.00		0.69	1.00		0.20	1.00	
Satd. Flow (perm)		1773			1661		1277	1832		369	1812	
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)	15	93	2	3	30	110	4	749	92	70	91	20
RTOR Reduction (vph)	0	2	0	0	84	0	0	6	0	0	8	0
Lane Group Flow (vph)	0	108	0	0	59	0	4	835	0	70	103	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		13.3			13.3		34.2	34.2		34.2	34.2	
Effective Green, g (s)		13.3			13.3		34.2	34.2		34.2	34.2	
Actuated g/C Ratio		0.24			0.24		0.61	0.61		0.61	0.61	
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)		422			395		781	1121		226	1109	
v/s Ratio Prot								c0.46			0.06	
v/s Ratio Perm		c0.06			0.04		0.00			0.19		
v/c Ratio		0.26			0.15		0.01	0.74		0.31	0.09	
Uniform Delay, d1		17.3			16.8		4.2	7.7		5.2	4.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.0	2.4		0.3	0.0	
Delay (s)		17.4			16.9		4.2	10.1		5.5	4.5	
Level of Service		B			B		A	B		A	A	
Approach Delay (s)		17.4			16.9			10.1			4.9	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
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)	28	121	66	22	211	58	49	600	103	111	1555	275
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		0.96			0.97		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)		1774			1806		1770	1822		1770	1821	
Flt Permitted		0.67			0.89		0.04	1.00		0.31	1.00	
Satd. Flow (perm)		1201			1616		69	1822		573	1821	
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)	30	132	72	24	229	63	53	652	112	121	1690	299
RTOR Reduction (vph)	0	12	0	0	7	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	222	0	0	309	0	53	760	0	121	1984	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		23.8			23.8		107.8	107.8		107.8	107.8	
Effective Green, g (s)		23.8			23.8		107.8	107.8		107.8	107.8	
Actuated g/C Ratio		0.17			0.17		0.77	0.77		0.77	0.77	
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)		204			275		53	1403		441	1402	
v/s Ratio Prot								0.42			c1.09	
v/s Ratio Perm		0.19			c0.19		0.77			0.21		
v/c Ratio		1.09			1.12		1.00	0.54		0.27	1.42	
Uniform Delay, d1		58.1			58.1		16.1	6.4		4.7	16.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		89.1			92.2		123.6	0.2		0.1	191.2	
Delay (s)		147.2			150.3		139.7	6.6		4.8	207.3	
Level of Service		F			F		F	A		A	F	
Approach Delay (s)		147.2			150.3			15.2			195.7	
Approach LOS		F			F			B			F	

Intersection Summary

HCM Average Control Delay	145.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	124.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
24: G St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	98	100	8	6	114	36	64	807	17	22	170	104
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		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.99			0.97		1.00	1.00		1.00	0.94	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3436			3410		1770	1857		1770	1757	
Flt Permitted		0.76			0.94		0.53	1.00		0.10	1.00	
Satd. Flow (perm)		2668			3229		981	1857		194	1757	
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)	107	109	9	7	124	39	70	877	18	24	185	113
RTOR Reduction (vph)	0	4	0	0	24	0	0	1	0	0	28	0
Lane Group Flow (vph)	0	221	0	0	146	0	70	894	0	24	271	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		30.0			30.0		38.4	38.4		38.4	38.4	
Effective Green, g (s)		30.0			30.0		38.4	38.4		38.4	38.4	
Actuated g/C Ratio		0.39			0.39		0.50	0.50		0.50	0.50	
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)		1042			1261		491	929		97	879	
v/s Ratio Prot								c0.48			0.15	
v/s Ratio Perm		c0.08			0.05		0.07			0.12		
v/c Ratio		0.21			0.12		0.14	0.96		0.25	0.31	
Uniform Delay, d1		15.5			14.9		10.3	18.5		11.0	11.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.0	20.7		0.5	0.1	
Delay (s)		15.6			15.0		10.4	39.2		11.4	11.4	
Level of Service		B			B		B	D		B	B	
Approach Delay (s)		15.6			15.0			37.1			11.4	
Approach LOS		B			B			D			B	

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	8.4
Intersection Capacity Utilization	113.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
24: G St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	268	325	162	80	438	44	76	661	44	43	1724	253
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		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.99		1.00	0.98	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3366			3473		1770	1845		1770	1827	
Flt Permitted		0.55			0.55		0.05	1.00		0.22	1.00	
Satd. Flow (perm)		1883			1922		86	1845		415	1827	
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)	291	353	176	87	476	48	83	718	48	47	1874	275
RTOR Reduction (vph)	0	12	0	0	5	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	808	0	0	606	0	83	764	0	47	2145	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		44.8			44.8		86.8	86.8		86.8	86.8	
Effective Green, g (s)		44.8			44.8		86.8	86.8		86.8	86.8	
Actuated g/C Ratio		0.32			0.32		0.62	0.62		0.62	0.62	
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)		603			615		53	1144		257	1133	
v/s Ratio Prot								0.41			c1.17	
v/s Ratio Perm		c0.43			0.32		0.97			0.11		
v/c Ratio		1.70dl			0.99		1.57	0.67		0.18	1.89	
Uniform Delay, d1		47.6			47.3		26.6	17.3		11.4	26.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		163.8			32.3		327.7	1.2		0.1	405.4	
Delay (s)		211.4			79.6		354.3	18.4		11.5	432.0	
Level of Service		F			E		F	B		B	F	
Approach Delay (s)		211.4			79.6			51.2			423.0	
Approach LOS		F			E			D			F	

Intersection Summary

HCM Average Control Delay	266.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	166.6%	ICU Level of Service	H
Analysis Period (min)	15		

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

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)	243	445	43	105	258	80	121	663	153	61	193	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		4.2	4.2		4.2	4.2	
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	0.96		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	3492		1770	3413		1770	3440		1770	3390	
Flt Permitted	0.53	1.00		0.42	1.00		0.57	1.00		0.23	1.00	
Satd. Flow (perm)	993	3492		786	3413		1068	3440		427	3390	
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)	264	484	47	114	280	87	132	721	166	66	210	82
RTOR Reduction (vph)	0	13	0	0	51	0	0	32	0	0	46	0
Lane Group Flow (vph)	264	518	0	114	316	0	132	855	0	66	246	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	23.6	23.6		23.6	23.6		25.0	25.0		25.0	25.0	
Effective Green, g (s)	23.6	23.6		23.6	23.6		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	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		4.2	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	
Lane Grp Cap (vph)	409	1438		324	1406		466	1501		186	1479	
v/s Ratio Prot		0.15			0.09			c0.25			0.07	
v/s Ratio Perm	c0.27			0.14			0.12			0.15		
v/c Ratio	0.65	0.36		0.35	0.22		0.28	0.57		0.35	0.17	
Uniform Delay, d1	13.5	11.6		11.6	10.9		10.4	12.1		10.8	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.1		0.2	0.0		0.1	0.3		0.4	0.0	
Delay (s)	16.1	11.7		11.8	11.0		10.5	12.4		11.2	9.8	
Level of Service	B	B		B	B		B	B		B	A	
Approach Delay (s)		13.2			11.2			12.2			10.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	8.7
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
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)	189	422	197	187	321	145	88	781	131	175	1656	224
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		4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.95		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	3370		1770	3374		1770	3463		1770	3476	
Flt Permitted	0.36	1.00		0.26	1.00		0.06	1.00		0.22	1.00	
Satd. Flow (perm)	679	3370		477	3374		117	3463		415	3476	
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)	205	459	214	203	349	158	96	849	142	190	1800	243
RTOR Reduction (vph)	0	11	0	0	47	0	0	12	0	0	10	0
Lane Group Flow (vph)	205	662	0	203	460	0	96	979	0	190	2033	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.5	37.5		37.5	37.5		63.8	63.8		63.8	63.8	
Effective Green, g (s)	37.5	37.5		37.5	37.5		63.8	63.8		63.8	63.8	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)	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	
Lane Grp Cap (vph)	231	1149		163	1150		68	2009		241	2016	
v/s Ratio Prot		0.20			0.14			0.28			0.58	
v/s Ratio Perm	0.30			c0.43			c0.82			0.46		
v/c Ratio	0.89	0.58		1.25	0.40		1.41	0.49		0.79	1.01	
Uniform Delay, d1	34.3	29.7		36.2	27.7		23.1	13.5		17.9	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.2	0.4		151.3	0.1		252.0	0.1		14.5	22.2	
Delay (s)	64.4	30.2		187.6	27.7		275.1	13.6		32.4	45.3	
Level of Service	E	C		F	C		F	B		C	D	
Approach Delay (s)		38.2			73.4			36.7			44.2	
Approach LOS		D			E			D			D	

Intersection Summary

HCM Average Control Delay	45.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	126.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: Van Ness Ave & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	210	85	136	377	55	118	510	160	60	228	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	0.96		1.00	0.98		1.00	0.96		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	3471		1770	3412		1770	3323	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1782		1770	3471		1770	3412		1770	3323	
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)	92	228	92	148	410	60	128	554	174	65	248	170
RTOR Reduction (vph)	0	19	0	0	15	0	0	39	0	0	122	0
Lane Group Flow (vph)	92	301	0	148	455	0	128	689	0	65	296	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.0	17.8		8.4	20.2		5.9	21.0		4.0	19.1	
Effective Green, g (s)	6.0	17.8		8.4	20.2		5.9	21.0		4.0	19.1	
Actuated g/C Ratio	0.09	0.26		0.12	0.30		0.09	0.31		0.06	0.28	
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)	157	469		220	1037		154	1060		105	939	
v/s Ratio Prot	0.05	c0.17		c0.08	0.13		c0.07	c0.20		0.04	0.09	
v/s Ratio Perm												
v/c Ratio	0.59	0.64		0.67	0.44		0.83	0.65		0.62	0.32	
Uniform Delay, d1	29.6	22.1		28.3	19.1		30.4	20.1		31.1	19.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	4.1		6.2	0.6		28.9	1.9		7.4	0.4	
Delay (s)	33.2	26.1		34.5	19.8		59.3	22.0		38.5	19.5	
Level of Service	C	C		C	B		E	C		D	B	
Approach Delay (s)		27.7			23.3			27.6			22.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	12.2
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
26: Van Ness Ave & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	110	399	207	348	430	84	140	835	156	126	1335	211
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	0.95		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	1767		1770	3453		1770	3455		1770	3467	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1767		1770	3453		1770	3455		1770	3467	
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)	120	434	225	378	467	91	152	908	170	137	1451	229
RTOR Reduction (vph)	0	13	0	0	10	0	0	10	0	0	8	0
Lane Group Flow (vph)	120	646	0	378	548	0	152	1068	0	137	1672	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	45.8		23.0	54.8		10.0	52.8		12.0	54.8	
Effective Green, g (s)	14.0	45.8		23.0	54.8		10.0	52.8		12.0	54.8	
Actuated g/C Ratio	0.09	0.31		0.15	0.37		0.07	0.35		0.08	0.37	
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)	165	540		271	1261		118	1216		142	1267	
v/s Ratio Prot	0.07	c0.37		c0.21	0.16		c0.09	0.31		0.08	c0.48	
v/s Ratio Perm												
v/c Ratio	0.73	1.20		1.39	0.43		1.29	0.88		0.96	1.32	
Uniform Delay, d1	66.1	52.1		63.5	35.9		70.0	45.6		68.8	47.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.7	105.7		198.7	0.5		179.0	8.0		64.0	149.4	
Delay (s)	78.8	157.8		262.2	36.4		249.0	53.6		132.8	197.0	
Level of Service	E	F		F	D		F	D		F	F	
Approach Delay (s)		145.7			127.6			77.8			192.2	
Approach LOS		F			F			E			F	

Intersection Summary

HCM Average Control Delay	142.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
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)	167	374	180	0	0	0	0	492	154	176	552	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					0.96		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5008	1583					3413		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.35	1.00	
Satd. Flow (perm)		5008	1583					3413		644	3539	
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)	182	407	196	0	0	0	0	535	167	191	600	0
RTOR Reduction (vph)	0	0	128	0	0	0	0	53	0	0	0	0
Lane Group Flow (vph)	0	589	68	0	0	0	0	649	0	191	600	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.0	19.0					27.1		27.1	27.1	
Effective Green, g (s)		19.0	19.0					27.1		27.1	27.1	
Actuated g/C Ratio		0.34	0.34					0.49		0.49	0.49	
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)		1727	546					1679		317	1741	
v/s Ratio Prot		c0.12						0.19			0.17	
v/s Ratio Perm			0.04							c0.30		
v/c Ratio		0.34	0.12					0.39		0.60	0.34	
Uniform Delay, d1		13.4	12.4					8.8		10.1	8.6	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		2.2	0.0	
Delay (s)		13.4	12.4					8.8		12.3	8.6	
Level of Service		B	B					A		B	A	
Approach Delay (s)		13.2			0.0			8.8			9.5	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.1	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)	213	1195	408	0	0	0	0	820	217	238	1231	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					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5047	1583					3428		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.18	1.00	
Satd. Flow (perm)		5047	1583					3428		329	3539	
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)	232	1299	443	0	0	0	0	891	236	259	1338	0
RTOR Reduction (vph)	0	0	24	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1531	419	0	0	0	0	1125	0	259	1338	0
Turn Type	Split		Perm							Perm		
Protected Phases	2	2						4			4	
Permitted Phases			2							4		
Actuated Green, G (s)		19.4	19.4					31.5		31.5	31.5	
Effective Green, g (s)		19.4	19.4					31.5		31.5	31.5	
Actuated g/C Ratio		0.32	0.32					0.53		0.53	0.53	
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)		1635	513					1803		173	1861	
v/s Ratio Prot		c0.30						0.33			0.38	
v/s Ratio Perm			0.26							c0.79		
v/c Ratio		0.94	0.82					0.62		1.50	0.72	
Uniform Delay, d1		19.7	18.6					10.0		14.2	10.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		10.4	9.3					0.5		251.6	1.1	
Delay (s)		30.0	27.9					10.5		265.8	12.0	
Level of Service		C	C					B		F	B	
Approach Delay (s)		29.6			0.0			10.5			53.1	
Approach LOS		C			A			B			D	

Intersection Summary

HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
28: P St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	114	306	43	128	330	0	0	962	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	0.21	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	396	3539			3539	1583
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)	0	0	0	124	333	47	139	359	0	0	1046	112
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	0	0	0	48
Lane Group Flow (vph)	0	0	0	124	333	25	139	359	0	0	1046	64
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				15.6	15.6	15.6	28.4	28.4			28.4	28.4
Effective Green, g (s)				15.6	15.6	15.6	28.4	28.4			28.4	28.4
Actuated g/C Ratio				0.30	0.30	0.30	0.54	0.54			0.54	0.54
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)				527	555	471	215	1918			1918	858
v/s Ratio Prot				0.07	c0.18			0.10			0.30	
v/s Ratio Perm						0.02	c0.35					0.04
v/c Ratio				0.24	0.60	0.05	0.65	0.19			0.55	0.07
Uniform Delay, d1				13.9	15.7	13.1	8.5	6.1			7.8	5.7
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.2	1.8	0.0	8.8	0.1			0.6	0.1
Delay (s)				14.1	17.5	13.2	17.3	6.2			8.4	5.8
Level of Service				B	B	B	B	A			A	A
Approach Delay (s)		0.0			16.3			9.3			8.1	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	52.4	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
28: P St & Tulare St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	82	568	95	163	1248	0	0	1196	184
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	0.14	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	259	3539			3539	1583
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)	0	0	0	89	617	103	177	1357	0	0	1300	200
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	0	89	617	84	177	1357	0	0	1300	168
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				24.8	24.8	24.8	46.8	46.8			46.8	46.8
Effective Green, g (s)				24.8	24.8	24.8	46.8	46.8			46.8	46.8
Actuated g/C Ratio				0.31	0.31	0.31	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)				549	578	491	152	2070			2070	926
v/s Ratio Prot				0.05	c0.33			0.38			0.37	
v/s Ratio Perm						0.05	c0.68					0.11
v/c Ratio				0.16	1.07	0.17	1.16	0.66			0.63	0.18
Uniform Delay, d1				20.1	27.6	20.1	16.6	11.2			10.9	7.7
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	56.7	0.2	124.0	1.0			0.9	0.2
Delay (s)				20.2	84.3	20.3	140.6	12.2			11.7	7.9
Level of Service				C	F	C	F	B			B	A
Approach Delay (s)		0.0			69.1			27.0			11.2	
Approach LOS		A			E			C			B	

Intersection Summary

HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
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	44	118	210	81	47	276	26	90	984	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	3494		1770	3487	
Flt Permitted	0.58	1.00	1.00	0.65	1.00	1.00	0.15	1.00		0.55	1.00	
Satd. Flow (perm)	1086	1863	1583	1210	1863	1583	287	3494		1031	3487	
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)	40	170	48	128	228	88	51	300	28	98	1070	116
RTOR Reduction (vph)	0	0	32	0	0	59	0	12	0	0	14	0
Lane Group Flow (vph)	40	170	16	128	228	29	51	316	0	98	1172	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	30.0	30.0		30.0	30.0	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.0	30.0		30.0	30.0	
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)	357	612	520	398	612	520	149	1813		535	1810	
v/s Ratio Prot		0.09			c0.12			0.09			c0.34	
v/s Ratio Perm	0.04		0.01	0.11		0.02	0.18			0.10		
v/c Ratio	0.11	0.28	0.03	0.32	0.37	0.06	0.34	0.17		0.18	0.65	
Uniform Delay, d1	13.5	14.3	13.2	14.6	14.8	13.3	8.1	7.4		7.4	10.1	
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	0.2	0.1	0.0	0.5	0.0		0.1	0.6	
Delay (s)	13.6	14.4	13.2	14.7	15.0	13.3	8.6	7.4		7.4	10.7	
Level of Service	B	B	B	B	B	B	A	A		A	B	
Approach Delay (s)		14.1			14.6			7.5			10.4	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	8.8
Intersection Capacity Utilization	101.9%	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	421	166	243	370	103	125	936	247	65	965	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)	4.6	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	0.97		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	1863	1583	1770	1863	1583	1770	3428		1770	3514	
Flt Permitted	0.39	1.00	1.00	0.33	1.00	1.00	0.15	1.00		0.13	1.00	
Satd. Flow (perm)	734	1863	1583	623	1863	1583	282	3428		248	3514	
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)	123	458	180	264	402	112	136	1017	268	71	1049	53
RTOR Reduction (vph)	0	0	31	0	0	34	0	37	0	0	5	0
Lane Group Flow (vph)	123	458	149	264	402	78	136	1248	0	71	1097	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)	26.2	26.2	26.2	26.2	26.2	26.2	30.0	30.0		30.0	30.0	
Effective Green, g (s)	26.2	26.2	26.2	26.2	26.2	26.2	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.46	0.46		0.46	0.46	
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)	296	751	638	251	751	638	130	1582		114	1622	
v/s Ratio Prot		0.25			0.22			0.36			0.31	
v/s Ratio Perm	0.17		0.09	c0.42		0.05	c0.48			0.29		
v/c Ratio	0.42	0.61	0.23	1.05	0.54	0.12	1.05	0.79		0.62	0.68	
Uniform Delay, d1	13.9	15.4	12.8	19.4	14.8	12.2	17.5	14.8		13.2	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	0.3	1.0	0.1	71.1	0.4	0.0	91.8	2.5		7.4	0.9	
Delay (s)	14.3	16.3	12.9	90.5	15.1	12.2	109.3	17.3		20.6	14.6	
Level of Service	B	B	B	F	B	B	F	B		C	B	
Approach Delay (s)		15.2			40.3			26.1			15.0	
Approach LOS		B			D			C			B	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
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)	39	205	38	0	0	0	21	285	74	307	1147	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	0.97		1.00	0.98	
Flt Protected		0.99	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1848	1583				1770	3430		1770	3474	
Flt Permitted		0.99	1.00				0.13	1.00		0.52	1.00	
Satd. Flow (perm)		1848	1583				244	3430		971	3474	
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)	42	223	41	0	0	0	23	310	80	334	1247	174
RTOR Reduction (vph)	0	0	21	0	0	0	0	23	0	0	11	0
Lane Group Flow (vph)	0	265	20	0	0	0	23	367	0	334	1410	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		10.5	10.5				31.2	31.2		31.2	31.2	
Effective Green, g (s)		10.5	10.5				31.2	31.2		31.2	31.2	
Actuated g/C Ratio		0.21	0.21				0.61	0.61		0.61	0.61	
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)		381	327				150	2102		595	2129	
v/s Ratio Prot		c0.14						0.11			c0.41	
v/s Ratio Perm			0.01				0.09			0.34		
v/c Ratio		0.70	0.06				0.15	0.17		0.56	0.66	
Uniform Delay, d1		18.7	16.2				4.2	4.3		5.8	6.4	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.4	0.0				0.7	0.1		1.5	0.9	
Delay (s)		23.1	16.3				4.9	4.3		7.3	7.3	
Level of Service		C	B				A	A		A	A	
Approach Delay (s)		22.2			0.0			4.4			7.3	
Approach LOS		C			A			A			A	

Intersection Summary

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	69.6%	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)	254	486	59	0	0	0	30	915	85	304	969	182
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)		1831	1583				1770	3494		1770	3455	
Flt Permitted		0.98	1.00				0.14	1.00		0.19	1.00	
Satd. Flow (perm)		1831	1583				264	3494		353	3455	
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)	276	528	64	0	0	0	33	995	92	330	1053	198
RTOR Reduction (vph)	0	0	9	0	0	0	0	7	0	0	16	0
Lane Group Flow (vph)	0	804	55	0	0	0	33	1080	0	330	1235	0
Turn Type	Split		Perm				Perm			Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		34.4	34.4				56.4	56.4		56.4	56.4	
Effective Green, g (s)		34.4	34.4				56.4	56.4		56.4	56.4	
Actuated g/C Ratio		0.34	0.34				0.56	0.56		0.56	0.56	
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)		630	545				149	1971		199	1949	
v/s Ratio Prot		c0.44						0.31			0.36	
v/s Ratio Perm			0.04				0.12			c0.93		
v/c Ratio		1.28	0.10				0.22	0.55		1.66	0.63	
Uniform Delay, d1		32.8	22.3				10.9	13.8		21.8	14.8	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		136.3	0.0				1.1	0.4		317.5	0.8	
Delay (s)		169.1	22.3				11.9	14.2		339.3	15.6	
Level of Service		F	C				B	B		F	B	
Approach Delay (s)		158.3			0.0			14.1			83.1	
Approach LOS		F			A			B			F	

Intersection Summary

HCM Average Control Delay	79.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
31: Divisadero Connector & Tulare St

4/9/2012

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	839	0	315	617	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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	912	0	342	671	0
RTOR Reduction (vph)	0	503	0	0	0	0
Lane Group Flow (vph)	0	409	0	342	671	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		15.3		10.6	14.8	
Effective Green, g (s)		15.3		10.6	14.8	
Actuated g/C Ratio		0.45		0.31	0.43	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		1250		1100	1536	
v/s Ratio Prot				c0.10	c0.19	
v/s Ratio Perm		0.15				
v/c Ratio		0.33		0.31	0.44	
Uniform Delay, d1		6.1		9.0	6.7	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.3	
Delay (s)		6.1		9.1	7.0	
Level of Service		A		A	A	
Approach Delay (s)	6.1			9.1	7.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	34.1	Sum of lost time (s)	8.7
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	1096	0	1194	465	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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1191	0	1298	505	0
RTOR Reduction (vph)	0	817	0	0	0	0
Lane Group Flow (vph)	0	374	0	1298	505	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		14.1		22.6	13.6	
Effective Green, g (s)		14.1		22.6	13.6	
Actuated g/C Ratio		0.31		0.50	0.30	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		875		1781	1072	
v/s Ratio Prot				c0.37	c0.14	
v/s Ratio Perm		0.13				
v/c Ratio		0.43		0.73	0.47	
Uniform Delay, d1		12.2		8.7	12.7	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.5	0.4	
Delay (s)		12.3		10.3	13.2	
Level of Service		B		B	B	
Approach Delay (s)	12.3			10.3	13.2	
Approach LOS	B			B	B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	8.7
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
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	592	9	0	524	0	0	0	0	434	856	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)		3531			3539					1610	3382	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3531			3539					1610	3382	1583
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)	0	643	10	0	570	0	0	0	0	472	930	890
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	652	0	0	570	0	0	0	0	425	977	865
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		14.8			14.8					35.7	35.7	35.7
Effective Green, g (s)		14.8			14.8					35.7	35.7	35.7
Actuated g/C Ratio		0.25			0.25					0.61	0.61	0.61
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)		893			895					983	2064	966
v/s Ratio Prot		c0.18			0.16							
v/s Ratio Perm										0.26	0.29	c0.55
v/c Ratio		0.73			0.64					0.43	0.47	0.90
Uniform Delay, d1		20.0			19.5					6.0	6.2	9.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		3.0			1.5					0.3	0.2	10.7
Delay (s)		23.0			21.0					6.3	6.4	20.6
Level of Service		C			C					A	A	C
Approach Delay (s)		23.0			21.0			0.0			11.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.9%	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	1132	70	0	732	0	0	0	0	543	1057	670
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		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)		3508			3539					1610	3382	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3508			3539					1610	3382	1583
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)	0	1230	76	0	796	0	0	0	0	590	1149	728
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	1299	0	0	796	0	0	0	0	531	1208	693
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		25.0			25.0					32.0	32.0	32.0
Effective Green, g (s)		25.0			25.0					32.0	32.0	32.0
Actuated g/C Ratio		0.38			0.38					0.49	0.49	0.49
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)		1349			1361					793	1665	779
v/s Ratio Prot		c0.37			0.22							
v/s Ratio Perm										0.33	0.36	c0.44
v/c Ratio		0.96			0.58					0.67	0.73	0.89
Uniform Delay, d1		19.5			15.9					12.5	13.0	14.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		16.4			0.6					2.2	1.6	12.1
Delay (s)		36.0			16.5					14.7	14.6	27.0
Level of Service		D			B					B	B	C
Approach Delay (s)		36.0			16.5			0.0			18.3	
Approach LOS		D			B			A			B	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
33: Tulare St & 41 Off- Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	131	229	0	407	212	473
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	249	0	442	230	514
RTOR Reduction (vph)	0	161	0	0	0	254
Lane Group Flow (vph)	142	88	0	442	230	260
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	20.8	20.8		20.8	29.6	29.6
Effective Green, g (s)	20.8	20.8		20.8	29.6	29.6
Actuated g/C Ratio	0.35	0.35		0.35	0.51	0.51
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)	1256	562		1256	894	800
v/s Ratio Prot	0.04			c0.12	0.13	
v/s Ratio Perm		0.06				c0.16
v/c Ratio	0.11	0.16		0.35	0.26	0.32
Uniform Delay, d1	12.7	12.9		13.9	8.2	8.6
Progression Factor	1.00	1.00		0.62	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.1	0.1	0.1
Delay (s)	12.7	13.0		8.7	8.3	8.7
Level of Service	B	B		A	A	A
Approach Delay (s)	12.9			8.7	8.6	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	8.2
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
33: Tulare St & 41 Off- Ramp

4/9/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	605	685	0	339	197	546
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	658	745	0	368	214	593
RTOR Reduction (vph)	0	495	0	0	0	35
Lane Group Flow (vph)	658	250	0	368	214	558
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	26.8	26.8		26.8	45.0	45.0
Effective Green, g (s)	26.8	26.8		26.8	45.0	45.0
Actuated g/C Ratio	0.34	0.34		0.34	0.56	0.56
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)	1186	530		1186	996	890
v/s Ratio Prot	c0.19			0.10	0.12	
v/s Ratio Perm		0.16				c0.35
v/c Ratio	0.55	0.47		0.31	0.21	0.63
Uniform Delay, d1	21.7	21.0		19.7	8.7	11.8
Progression Factor	1.00	1.00		0.63	1.00	1.00
Incremental Delay, d2	0.6	0.7		0.1	0.0	1.0
Delay (s)	22.3	21.7		12.6	8.7	12.8
Level of Service	C	C		B	A	B
Approach Delay (s)	22.0			12.6	11.7	
Approach LOS	C			B	B	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	386	531	495	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	0.97	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)	3776	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3776	3893	3893	1742		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	577	538	577	0	0
RTOR Reduction (vph)	0	0	0	404	0	0
Lane Group Flow (vph)	420	577	538	173	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	8.3	29.6	17.6	17.6		
Effective Green, g (s)	8.3	29.6	17.6	17.6		
Actuated g/C Ratio	0.14	0.51	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)	535	1966	1169	523		
v/s Ratio Prot	c0.11	0.15	c0.14			
v/s Ratio Perm				0.10		
v/c Ratio	0.79	0.29	0.46	0.33		
Uniform Delay, d1	24.3	8.4	16.6	15.9		
Progression Factor	1.00	1.00	1.15	2.37		
Incremental Delay, d2	10.3	0.0	0.4	0.5		
Delay (s)	34.6	8.5	19.5	38.2		
Level of Service	C	A	B	D		
Approach Delay (s)		19.5	29.2		0.0	
Approach LOS		B	C		A	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	32.7
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
330: E Divisadero St &

4/9/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	962	751	702	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	0.97	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)	3776	3893	3893	1742		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3776	3893	3893	1742		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1046	816	763	565	0	0
RTOR Reduction (vph)	0	0	0	431	0	0
Lane Group Flow (vph)	1046	816	763	134	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	22.3	45.0	19.0	19.0		
Effective Green, g (s)	22.3	45.0	19.0	19.0		
Actuated g/C Ratio	0.28	0.56	0.24	0.24		
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)	1053	2190	925	414		
v/s Ratio Prot	c0.28	0.21	c0.20			
v/s Ratio Perm				0.08		
v/c Ratio	0.99	0.37	0.82	0.32		
Uniform Delay, d1	28.8	9.7	28.9	25.2		
Progression Factor	1.00	1.00	1.14	2.46		
Incremental Delay, d2	26.2	0.0	5.5	0.6		
Delay (s)	55.0	9.7	38.6	62.4		
Level of Service	D	A	D	E		
Approach Delay (s)		35.1	48.7		0.0	
Approach LOS		D	D		A	

Intersection Summary

HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	38.7
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
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)	347	591	88	93	701	164	388	274	27	275	410	281
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	0.97		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)	3433	3539	1583	3433	3439		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	3439		3433	3539	1583	3433	3539	1583
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)	377	642	96	101	762	178	422	298	29	299	446	305
RTOR Reduction (vph)	0	0	46	0	21	0	0	0	22	0	0	156
Lane Group Flow (vph)	377	642	50	101	919	0	422	298	7	299	446	149
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)	9.0	33.2	33.2	5.7	29.6		10.0	21.4	21.4	11.6	22.7	22.7
Effective Green, g (s)	9.0	33.2	33.2	5.7	29.6		10.0	21.4	21.4	11.6	22.7	22.7
Actuated g/C Ratio	0.10	0.37	0.37	0.06	0.33		0.11	0.24	0.24	0.13	0.25	0.25
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)	347	1319	590	220	1142		385	850	380	447	902	403
v/s Ratio Prot	c0.11	c0.18		0.03	c0.27		c0.12	0.08		0.09	c0.13	
v/s Ratio Perm			0.03						0.00			0.09
v/c Ratio	1.09	0.49	0.09	0.46	0.80		1.10	0.35	0.02	0.67	0.49	0.37
Uniform Delay, d1	40.0	21.4	18.1	40.2	27.1		39.5	28.1	25.8	36.9	28.3	27.3
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	73.4	0.6	0.1	0.6	4.9		74.3	0.5	0.0	2.9	1.0	1.3
Delay (s)	113.5	22.0	18.2	40.8	32.0		113.8	28.6	25.9	39.9	29.3	28.6
Level of Service	F	C	B	D	C		F	C	C	D	C	C
Approach Delay (s)		52.6			32.8			76.5			32.1	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	46.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	17.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
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)	566	842	174	138	696	182	359	765	48	451	789	174
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	0.97		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)	3433	3539	1583	3433	3429		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	3429		3433	3539	1583	3433	3539	1583
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)	615	915	189	150	757	198	390	832	52	490	858	189
RTOR Reduction (vph)	0	0	62	0	22	0	0	0	19	0	0	100
Lane Group Flow (vph)	615	915	127	150	933	0	390	832	33	490	858	89
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)	18.0	39.1	39.1	8.2	29.0		12.0	25.5	25.5	15.0	28.2	28.2
Effective Green, g (s)	18.0	39.1	39.1	8.2	29.0		12.0	25.5	25.5	15.0	28.2	28.2
Actuated g/C Ratio	0.17	0.37	0.37	0.08	0.28		0.11	0.24	0.24	0.14	0.27	0.27
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)	589	1318	589	268	947		392	859	384	490	950	425
v/s Ratio Prot	c0.18	0.26		0.04	c0.27		0.11	0.24		c0.14	c0.24	
v/s Ratio Perm			0.08						0.02			0.06
v/c Ratio	1.04	0.69	0.22	0.56	0.98		0.99	0.97	0.09	1.00	0.90	0.21
Uniform Delay, d1	43.5	27.9	22.5	46.7	37.8		46.5	39.4	30.7	45.0	37.1	29.8
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	49.1	2.0	0.4	1.4	25.5		43.8	23.4	0.2	40.7	12.5	0.5
Delay (s)	92.6	29.9	22.9	48.1	63.3		90.3	62.7	30.9	85.7	49.6	30.3
Level of Service	F	C	C	D	E		F	E	C	F	D	C
Approach Delay (s)		51.6			61.2			69.9			58.7	
Approach LOS		D			E			E			E	

Intersection Summary

HCM Average Control Delay	59.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
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)	42	990	122	68	195	147	8	106	9	83	64	256
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	0.91			0.95			1.00			1.00	
Frt	1.00	0.98			0.95			0.99			0.91	
Flt Protected	0.95	1.00			0.99			1.00			0.99	
Satd. Flow (prot)	1770	5001			3321			1838			1686	
Flt Permitted	0.49	1.00			0.69			0.97			0.91	
Satd. Flow (perm)	920	5001			2312			1785			1542	
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)	46	1076	133	74	212	160	9	115	10	90	70	278
RTOR Reduction (vph)	0	26	0	0	81	0	0	5	0	0	103	0
Lane Group Flow (vph)	46	1183	0	0	365	0	0	129	0	0	335	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			21.0			21.0	
Effective Green, g (s)	29.0	29.0			29.0			21.0			21.0	
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)	452	2458			1136			635			549	
v/s Ratio Prot		c0.24										
v/s Ratio Perm	0.05				0.16			0.07			c0.22	
v/c Ratio	0.10	0.48			0.32			0.20			0.61	
Uniform Delay, d1	8.0	10.0			9.1			13.2			15.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.1			0.1			0.1			1.4	
Delay (s)	8.1	10.0			9.1			13.3			17.0	
Level of Service	A	B			A			B			B	
Approach Delay (s)		10.0			9.1			13.3			17.0	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
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)	148	922	52	31	380	217	121	147	33	41	8	121
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	0.91			0.95			1.00			1.00	
Frt	1.00	0.99			0.95			0.99			0.90	
Flt Protected	0.95	1.00			1.00			0.98			0.99	
Satd. Flow (prot)	1770	5044			3347			1799			1664	
Flt Permitted	0.35	1.00			0.87			0.81			0.88	
Satd. Flow (perm)	655	5044			2914			1492			1482	
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)	161	1002	57	34	413	236	132	160	36	45	9	132
RTOR Reduction (vph)	0	11	0	0	117	0	0	7	0	0	85	0
Lane Group Flow (vph)	161	1048	0	0	566	0	0	321	0	0	101	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	29.2	29.2			29.2			21.0			21.0	
Effective Green, g (s)	29.2	29.2			29.2			21.0			21.0	
Actuated g/C Ratio	0.49	0.49			0.49			0.35			0.35	
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)	323	2488			1437			529			526	
v/s Ratio Prot		0.21										
v/s Ratio Perm	c0.25				0.19			c0.22			0.07	
v/c Ratio	0.50	0.42			0.39			0.61			0.19	
Uniform Delay, d1	10.1	9.6			9.4			15.7			13.2	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.4	0.0			0.1			1.4			0.1	
Delay (s)	10.5	9.6			9.5			17.1			13.3	
Level of Service	B	A			A			B			B	
Approach Delay (s)		9.8			9.5			17.1			13.3	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
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)	128	21	49	40	25	39	83	1201	31	93	906	127
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	1.00		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	1693		1770	3526		1770	3474	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.21	1.00		0.15	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1693		383	3526		275	3474	
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)	139	23	53	43	27	42	90	1305	34	101	985	138
RTOR Reduction (vph)	0	0	46	0	38	0	0	1	0	0	10	0
Lane Group Flow (vph)	139	23	7	43	31	0	90	1338	0	101	1113	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)	8.1	10.4	10.4	4.0	6.3		47.3	47.3		47.3	47.3	
Effective Green, g (s)	8.1	10.4	10.4	4.0	6.3		47.3	47.3		47.3	47.3	
Actuated g/C Ratio	0.11	0.14	0.14	0.05	0.09		0.64	0.64		0.64	0.64	
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)	193	261	222	96	144		244	2251		176	2218	
v/s Ratio Prot	c0.08	0.01		0.02	c0.02			c0.38			0.32	
v/s Ratio Perm			0.00				0.23			0.37		
v/c Ratio	0.72	0.09	0.03	0.45	0.21		0.37	0.59		0.57	0.50	
Uniform Delay, d1	31.9	27.7	27.5	34.0	31.6		6.3	7.8		7.6	7.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	0.1	0.0	1.2	0.3		2.6	0.8		8.7	0.5	
Delay (s)	42.5	27.8	27.5	35.2	31.9		9.0	8.6		16.4	7.6	
Level of Service	D	C	C	D	C		A	A		B	A	
Approach Delay (s)		37.3			33.1			8.6			8.4	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	12.4
Intersection Capacity Utilization	64.3%	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)	253	99	338	379	189	77	158	1201	50	104	1312	190
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	0.96		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	1782		1770	3518		1770	3472	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.07	1.00		0.10	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1782		125	3518		192	3472	
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)	275	108	367	412	205	84	172	1305	54	113	1426	207
RTOR Reduction (vph)	0	0	24	0	13	0	0	3	0	0	10	0
Lane Group Flow (vph)	275	108	343	412	276	0	172	1356	0	113	1623	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)	15.0	21.8	21.8	16.0	22.8		59.8	59.8		59.8	59.8	
Effective Green, g (s)	15.0	21.8	21.8	16.0	22.8		59.8	59.8		59.8	59.8	
Actuated g/C Ratio	0.14	0.20	0.20	0.15	0.21		0.54	0.54		0.54	0.54	
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)	241	369	314	257	369		68	1913		104	1888	
v/s Ratio Prot	0.16	0.06		c0.23	0.15			0.39			0.47	
v/s Ratio Perm			c0.22				c1.38			0.59		
v/c Ratio	1.14	0.29	1.09	1.60	0.75		2.53	0.71		1.09	0.86	
Uniform Delay, d1	47.5	37.5	44.1	47.0	40.9		25.1	18.6		25.1	21.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	101.3	0.2	77.7	288.9	7.0		729.5	1.8		113.5	4.8	
Delay (s)	148.8	37.7	121.8	335.9	47.9		754.6	20.4		138.6	26.3	
Level of Service	F	D	F	F	D		F	C		F	C	
Approach Delay (s)		119.6			217.2			102.9			33.5	
Approach LOS		F			F			F			C	

Intersection Summary

HCM Average Control Delay	96.9	HCM Level of Service	F
HCM Volume to Capacity ratio	2.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
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)	552	485	409	0	0	0	0	854	458	237	635	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					0.95		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3354		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3354		1770	3539	
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)	600	527	445	0	0	0	0	928	498	258	690	0
RTOR Reduction (vph)	0	0	160	0	0	0	0	65	0	0	0	0
Lane Group Flow (vph)	600	527	285	0	0	0	0	1361	0	258	690	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	35.5	35.5	35.5					43.6		15.8	64.6	
Effective Green, g (s)	35.5	35.5	35.5					43.6		15.8	64.6	
Actuated g/C Ratio	0.32	0.32	0.32					0.40		0.14	0.59	
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)	571	601	511					1329		254	2078	
v/s Ratio Prot	c0.34	0.28						c0.41		c0.15	0.19	
v/s Ratio Perm			0.18									
v/c Ratio	1.05	0.88	0.56					1.02		1.02	0.33	
Uniform Delay, d1	37.2	35.2	30.8					33.2		47.1	11.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	51.7	15.3	3.0					31.1		60.6	0.0	
Delay (s)	88.9	50.4	33.7					64.3		107.7	11.7	
Level of Service	F	D	C					E		F	B	
Approach Delay (s)		60.4			0.0			64.3			37.8	
Approach LOS		E			A			E			D	

Intersection Summary

HCM Average Control Delay	56.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
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)	214	721	790	0	0	0	0	999	479	335	732	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					0.95		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583					3367		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3367		1770	3539	
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)	233	784	859	0	0	0	0	1086	521	364	796	0
RTOR Reduction (vph)	0	0	119	0	0	0	0	34	0	0	0	0
Lane Group Flow (vph)	233	784	740	0	0	0	0	1573	0	364	796	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	52.3	52.3	52.3					57.8		24.8	87.8	
Effective Green, g (s)	52.3	52.3	52.3					57.8		24.8	87.8	
Actuated g/C Ratio	0.35	0.35	0.35					0.39		0.17	0.59	
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)	617	650	552					1297		293	2071	
v/s Ratio Prot	0.13	0.42						c0.47		c0.21	0.22	
v/s Ratio Perm			c0.47									
v/c Ratio	0.38	1.21	1.34					1.21		1.24	0.38	
Uniform Delay, d1	36.6	48.9	48.9					46.1		62.6	16.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	1.1	106.8	165.0					103.2		134.6	0.0	
Delay (s)	37.8	155.7	213.9					149.3		197.2	16.7	
Level of Service	D	F	F					F		F	B	
Approach Delay (s)		167.7			0.0			149.3			73.3	
Approach LOS		F			A			F			E	

Intersection Summary

HCM Average Control Delay	137.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
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	352	517	388	643	770	0	0	512	206
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)					3469	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3469	1583	1770	3539			3539	1583
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)	0	0	0	383	562	422	699	837	0	0	557	224
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	0	0	0	72
Lane Group Flow (vph)	0	0	0	0	945	294	699	837	0	0	557	152
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					32.0	32.0	41.3	64.4			19.4	19.4
Effective Green, g (s)					32.0	32.0	41.3	64.4			19.4	19.4
Actuated g/C Ratio					0.30	0.30	0.39	0.60			0.18	0.18
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)					1037	473	683	2130			642	287
v/s Ratio Prot					c0.27		c0.40	0.24			c0.16	
v/s Ratio Perm						0.19						0.10
v/c Ratio					0.91	0.62	1.02	0.39			0.87	0.53
Uniform Delay, d1					36.1	32.3	32.9	11.1			42.6	39.7
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					12.4	3.6	40.5	0.0			11.5	0.8
Delay (s)					48.5	35.9	73.4	11.2			54.1	40.5
Level of Service					D	D	E	B			D	D
Approach Delay (s)		0.0			44.6			39.5			50.2	
Approach LOS		A			D			D			D	

Intersection Summary

HCM Average Control Delay	43.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
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	335	511	585	647	557	0	0	722	925
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)					3470	1583	1770	3539			3539	1583
Flt Permitted					0.98	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					3470	1583	1770	3539			3539	1583
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)	0	0	0	364	555	636	703	605	0	0	785	1005
RTOR Reduction (vph)	0	0	0	0	0	274	0	0	0	0	0	20
Lane Group Flow (vph)	0	0	0	0	919	362	703	605	0	0	785	985
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					34.6	34.6	38.3	104.8			62.8	62.8
Effective Green, g (s)					34.6	34.6	38.3	104.8			62.8	62.8
Actuated g/C Ratio					0.23	0.23	0.26	0.70			0.42	0.42
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)					800	365	452	2473			1482	663
v/s Ratio Prot					c0.26		c0.40	0.17			0.22	
v/s Ratio Perm						0.23						c0.62
v/c Ratio					1.15	0.99	1.56	0.24			0.53	1.49
Uniform Delay, d1					57.7	57.6	55.9	8.2			32.6	43.6
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					81.3	44.9	260.6	0.0			0.2	226.7
Delay (s)					139.0	102.5	316.4	8.2			32.7	270.3
Level of Service					F	F	F	A			C	F
Approach Delay (s)		0.0			124.0			173.9			166.1	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	154.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
39: G St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	63	185	132	17	164	29	0	1018	29	0	482	121
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			4.2			4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95			0.95	1.00
Frt	1.00	1.00	0.85		0.98			1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	3539	1583		3451			3524			3539	1583
Flt Permitted	0.61	1.00	1.00		0.92			1.00			1.00	1.00
Satd. Flow (perm)	1135	3539	1583		3181			3524			3539	1583
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)	68	201	143	18	178	32	0	1107	32	0	524	132
RTOR Reduction (vph)	0	0	116	0	26	0	0	2	0	0	0	48
Lane Group Flow (vph)	68	201	27	0	202	0	0	1137	0	0	524	84
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4								2
Actuated Green, G (s)	9.2	9.2	9.2		9.2			31.1			31.1	31.1
Effective Green, g (s)	9.2	9.2	9.2		9.2			31.1			31.1	31.1
Actuated g/C Ratio	0.19	0.19	0.19		0.19			0.63			0.63	0.63
Clearance Time (s)	4.5	4.5	4.5		4.5			4.2			4.2	4.2
Vehicle Extension (s)	2.0	2.0	2.0		2.0			5.0			5.0	5.0
Lane Grp Cap (vph)	213	664	297		597			2237			2246	1005
v/s Ratio Prot		0.06						c0.32			0.15	
v/s Ratio Perm	0.06		0.02		c0.06							0.05
v/c Ratio	0.32	0.30	0.09		0.34			0.51			0.23	0.08
Uniform Delay, d1	17.2	17.1	16.4		17.3			4.8			3.8	3.5
Progression Factor	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			0.4			0.1	0.1
Delay (s)	17.5	17.2	16.5		17.4			5.2			3.9	3.5
Level of Service	B	B	B		B			A			A	A
Approach Delay (s)		17.0			17.4			5.2			3.9	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
39: G St & Fresno

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	79	640	97	37	633	68	0	755	88	0	1406	318
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			4.2			4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95			0.95	1.00
Frt	1.00	1.00	0.85		0.99			0.98			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	3539	1583		3482			3484			3539	1583
Flt Permitted	0.22	1.00	1.00		0.89			1.00			1.00	1.00
Satd. Flow (perm)	414	3539	1583		3112			3484			3539	1583
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)	86	696	105	40	688	74	0	821	96	0	1528	346
RTOR Reduction (vph)	0	0	10	0	12	0	0	13	0	0	0	47
Lane Group Flow (vph)	86	696	95	0	790	0	0	904	0	0	1528	299
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4								2
Actuated Green, G (s)	22.1	22.1	22.1		22.1			32.1			32.1	32.1
Effective Green, g (s)	22.1	22.1	22.1		22.1			32.1			32.1	32.1
Actuated g/C Ratio	0.35	0.35	0.35		0.35			0.51			0.51	0.51
Clearance Time (s)	4.5	4.5	4.5		4.5			4.2			4.2	4.2
Vehicle Extension (s)	2.0	2.0	2.0		2.0			5.0			5.0	5.0
Lane Grp Cap (vph)	145	1243	556		1093			1778			1806	808
v/s Ratio Prot		0.20						0.26			c0.43	
v/s Ratio Perm	0.21		0.06		c0.25							0.19
v/c Ratio	0.59	0.56	0.17		0.72			0.51			0.85	0.37
Uniform Delay, d1	16.7	16.5	14.1		17.7			10.2			13.3	9.3
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2	4.3	0.3	0.1		2.0			0.5			4.3	0.6
Delay (s)	21.0	16.8	14.1		19.8			10.7			17.5	9.9
Level of Service	C	B	B		B			B			B	A
Approach Delay (s)		16.9			19.8			10.7			16.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	8.7
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
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)	20	637	78	22	250	120	69	765	276	21	503	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	4.0	
Lane Util. Factor	1.00	0.95	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	0.96		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	3893	1742	1947	3704		1947	3738		1947	3871	
Flt Permitted	0.47	1.00	1.00	0.25	1.00		0.44	1.00		0.95	1.00	
Satd. Flow (perm)	969	3893	1742	519	3704		898	3738		1947	3871	
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)	22	692	85	24	272	130	75	832	300	23	547	22
RTOR Reduction (vph)	0	0	0	0	65	0	0	40	0	0	4	0
Lane Group Flow (vph)	22	692	85	24	337	0	75	1092	0	23	565	0
Turn Type	Perm		Free	Perm			Perm			Prot		
Protected Phases		6			2			4		3	8	
Permitted Phases	6		Free	2			4					
Actuated Green, G (s)	18.9	18.9	60.6	18.9	18.9		27.6	27.6		2.1	33.7	
Effective Green, g (s)	18.9	18.9	60.6	18.9	18.9		27.6	27.6		2.1	33.7	
Actuated g/C Ratio	0.31	0.31	1.00	0.31	0.31		0.46	0.46		0.03	0.56	
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)	302	1214	1742	162	1155		409	1702		67	2153	
v/s Ratio Prot		c0.18			0.09			c0.29		0.01	c0.15	
v/s Ratio Perm	0.02		0.05	0.05			0.08					
v/c Ratio	0.07	0.57	0.05	0.15	0.29		0.18	0.64		0.34	0.26	
Uniform Delay, d1	14.7	17.4	0.0	15.0	15.8		9.8	12.7		28.6	7.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7	0.1	0.4	0.1		0.2	0.8		3.1	0.1	
Delay (s)	14.8	18.1	0.1	15.5	15.9		10.0	13.5		31.6	7.1	
Level of Service	B	B	A	B	B		B	B		C	A	
Approach Delay (s)		16.1			15.9			13.3			8.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
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)	25	722	444	80	461	224	143	506	253	20	1200	21
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	0.95	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	0.95		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	3893	1742	1947	3702		1947	3698		1947	3883	
Flt Permitted	0.21	1.00	1.00	0.19	1.00		0.15	1.00		0.95	1.00	
Satd. Flow (perm)	429	3893	1742	382	3702		309	3698		1947	3883	
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)	27	785	483	87	501	243	155	550	275	22	1304	23
RTOR Reduction (vph)	0	0	0	0	63	0	0	67	0	0	2	0
Lane Group Flow (vph)	27	785	483	87	681	0	155	758	0	22	1325	0
Turn Type	Perm		Free	Perm			Perm			Prot		
Protected Phases		6			2			4		3	8	
Permitted Phases	6		Free	2			4					
Actuated Green, G (s)	25.4	25.4	79.3	25.4	25.4		39.3	39.3		2.6	45.9	
Effective Green, g (s)	25.4	25.4	79.3	25.4	25.4		39.3	39.3		2.6	45.9	
Actuated g/C Ratio	0.32	0.32	1.00	0.32	0.32		0.50	0.50		0.03	0.58	
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)	137	1247	1742	122	1186		153	1833		64	2248	
v/s Ratio Prot		0.20			0.18			0.21		0.01	c0.34	
v/s Ratio Perm	0.06		0.28	c0.23			c0.50					
v/c Ratio	0.20	0.63	0.28	0.71	0.57		1.01	0.41		0.34	0.59	
Uniform Delay, d1	19.6	22.9	0.0	23.7	22.4		20.0	12.7		37.5	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	0.7	1.0	0.4	17.8	0.7		76.2	0.2		3.2	0.4	
Delay (s)	20.3	23.9	0.4	41.6	23.1		96.2	12.8		40.7	11.1	
Level of Service	C	C	A	D	C		F	B		D	B	
Approach Delay (s)		15.1			25.1			26.0			11.6	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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)	57	23	19	14	1	3	50	72	751	82	96	511
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			0.99		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			1.00		0.95	1.00
Satd. Flow (prot)	1770	1735			1947	1598			3477		1770	1863
Flt Permitted	1.00	1.00			1.00	1.00			0.88		0.28	1.00
Satd. Flow (perm)	1863	1735			2049	1598			3067		528	1863
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)	62	25	21	15	1	3	54	78	816	89	104	555
RTOR Reduction (vph)	0	0	0	0	0	48	0	0	8	0	0	0
Lane Group Flow (vph)	62	46	0	0	16	9	0	0	975	0	104	555
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	3.7	3.7			3.7	3.7			20.0		20.0	20.0
Effective Green, g (s)	3.7	3.7			3.7	3.7			20.0		20.0	20.0
Actuated g/C Ratio	0.11	0.11			0.11	0.11			0.60		0.60	0.60
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)	207	193			228	178			1842		317	1119
v/s Ratio Prot		0.03				0.01						0.30
v/s Ratio Perm	c0.03				0.01				c0.32		0.20	
v/c Ratio	0.30	0.24			0.07	0.05			0.53		0.33	0.50
Uniform Delay, d1	13.6	13.5			13.3	13.2			3.9		3.3	3.8
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.3	0.2			0.0	0.0			0.1		0.2	0.1
Delay (s)	13.9	13.7			13.3	13.3			4.0		3.5	3.9
Level of Service	B	B			B	B			A		A	A
Approach Delay (s)		13.8				13.3			4.0			3.8
Approach LOS		B				B			A			A

Intersection Summary

HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	9.6
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	5	47
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)	5	51
RTOR Reduction (vph)	20	0
Lane Group Flow (vph)	36	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	20.0	
Effective Green, g (s)	20.0	
Actuated g/C Ratio	0.60	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1046	
v/s Ratio Prot		
v/s Ratio Perm	0.02	
v/c Ratio	0.03	
Uniform Delay, d1	2.7	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	2.7	
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)	69	8	63	117	4	90	176	80	636	39	165	1020
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	0.90			0.99		1.00	1.00
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1770	1616			1947	1678			3493		1770	1863
Flt Permitted	0.37	1.00			0.71	1.00			0.65		0.33	1.00
Satd. Flow (perm)	696	1616			1448	1678			2272		618	1863
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)	75	9	68	127	4	98	191	87	691	42	179	1109
RTOR Reduction (vph)	0	0	0	0	0	98	0	0	3	0	0	0
Lane Group Flow (vph)	75	77	0	0	131	191	0	0	817	0	179	1109
Turn Type	Perm			Perm	Perm			Perm			Perm	
Protected Phases		4				4			2			2
Permitted Phases	4			4	4			2			2	
Actuated Green, G (s)	10.7	10.7			10.7	10.7			51.8		51.8	51.8
Effective Green, g (s)	10.7	10.7			10.7	10.7			51.8		51.8	51.8
Actuated g/C Ratio	0.15	0.15			0.15	0.15			0.72		0.72	0.72
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)	103	240			215	249			1632		444	1338
v/s Ratio Prot		0.05				c0.11						c0.60
v/s Ratio Perm	0.11				0.09				0.36		0.29	
v/c Ratio	0.73	0.32			0.61	0.77			0.50		0.40	0.83
Uniform Delay, d1	29.3	27.5			28.7	29.5			4.5		4.0	7.1
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	19.4	0.3			3.3	12.0			0.1		0.2	4.2
Delay (s)	48.7	27.7			32.1	41.5			4.6		4.2	11.2
Level of Service	D	C			C	D			A		A	B
Approach Delay (s)		38.1				38.5			4.6			8.3
Approach LOS		D				D			A			A

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	9.6
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	37	467
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)	40	508
RTOR Reduction (vph)	143	0
Lane Group Flow (vph)	405	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	51.8	
Effective Green, g (s)	51.8	
Actuated g/C Ratio	0.72	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1252	
v/s Ratio Prot		
v/s Ratio Perm	0.23	
v/c Ratio	0.32	
Uniform Delay, d1	3.7	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.8	
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)	214	156	123	99	254	183	125	601	92	64	436	123
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	0.94		1.00	0.98		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	1740		1770	3317		1770	3469		1770	3422	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1740		1770	3317		1770	3469		1770	3422	
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)	233	170	134	108	276	199	136	653	100	70	474	134
RTOR Reduction (vph)	0	34	0	0	154	0	0	14	0	0	30	0
Lane Group Flow (vph)	233	270	0	108	321	0	136	739	0	70	578	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.3	22.0		7.9	17.6		8.1	24.8		5.9	22.6	
Effective Green, g (s)	12.3	22.0		7.9	17.6		8.1	24.8		5.9	22.6	
Actuated g/C Ratio	0.16	0.28		0.10	0.23		0.10	0.32		0.08	0.29	
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)	282	496		181	756		186	1114		135	1002	
v/s Ratio Prot	c0.13	c0.16		0.06	0.10		c0.08	c0.21		0.04	0.17	
v/s Ratio Perm												
v/c Ratio	0.83	0.55		0.60	0.43		0.73	0.66		0.52	0.58	
Uniform Delay, d1	31.4	23.4		33.1	25.5		33.5	22.6		34.3	23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.6	2.2		5.2	0.8		13.8	2.0		3.3	1.3	
Delay (s)	49.0	25.5		38.3	26.3		47.3	24.6		37.6	24.5	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		35.7			28.5			28.1			25.9	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	8.2
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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)	106	278	190	203	416	144	201	640	136	183	1042	113
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	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1749		1770	3402		1770	3446		1770	3487	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1749		1770	3402		1770	3446		1770	3487	
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)	115	302	207	221	452	157	218	696	148	199	1133	123
RTOR Reduction (vph)	0	23	0	0	32	0	0	17	0	0	8	0
Lane Group Flow (vph)	115	486	0	221	577	0	218	827	0	199	1248	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	28.1		13.1	29.9		12.9	32.4		14.8	34.3	
Effective Green, g (s)	11.3	28.1		13.1	29.9		12.9	32.4		14.8	34.3	
Actuated g/C Ratio	0.11	0.27		0.12	0.28		0.12	0.31		0.14	0.33	
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)	190	468		221	969		217	1063		249	1139	
v/s Ratio Prot	0.06	c0.28		c0.12	0.17		c0.12	0.24		0.11	c0.36	
v/s Ratio Perm												
v/c Ratio	0.61	1.04		1.00	0.60		1.00	0.78		0.80	1.10	
Uniform Delay, d1	44.7	38.5		46.0	32.3		46.0	33.0		43.7	35.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.4	51.7		60.5	1.5		62.3	4.3		16.2	56.8	
Delay (s)	50.1	90.1		106.5	33.8		108.3	37.3		59.9	92.1	
Level of Service	D	F		F	C		F	D		E	F	
Approach Delay (s)		82.7			53.2			51.9			87.7	
Approach LOS		F			D			D			F	

Intersection Summary

HCM Average Control Delay	70.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
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)	126	893	99	0	0	0	0	389	213	246	574	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)		5054	1583					3351		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.37	1.00	
Satd. Flow (perm)		5054	1583					3351		690	3539	
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)	137	971	108	0	0	0	0	423	232	267	624	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	1108	36	0	0	0	0	645	0	267	624	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					31.2		31.2	31.2	
Effective Green, g (s)		20.0	20.0					31.2		31.2	31.2	
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	531					1754		361	1853	
v/s Ratio Prot		c0.22						0.19			0.18	
v/s Ratio Perm			0.02							c0.39		
v/c Ratio		0.65	0.07					0.37		0.74	0.34	
Uniform Delay, d1		16.8	13.5					8.4		11.0	8.2	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0					0.0		6.7	0.0	
Delay (s)		17.5	13.5					8.4		17.7	8.3	
Level of Service		B	B					A		B	A	
Approach Delay (s)		17.2			0.0			8.4			11.1	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	82.0%	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)	228	982	77	0	0	0	0	787	255	327	1131	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					0.96		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5038	1583					3409		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.20	1.00	
Satd. Flow (perm)		5038	1583					3409		369	3539	
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)	248	1067	84	0	0	0	0	855	277	355	1229	0
RTOR Reduction (vph)	0	0	38	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1315	46	0	0	0	0	1130	0	355	1229	0
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			2	
Permitted Phases			4							2		
Actuated Green, G (s)		20.0	20.0					46.6		46.6	46.6	
Effective Green, g (s)		20.0	20.0					46.6		46.6	46.6	
Actuated g/C Ratio		0.27	0.27					0.62		0.62	0.62	
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)		1343	422					2118		229	2199	
v/s Ratio Prot		c0.26						0.33			0.35	
v/s Ratio Perm			0.03							c0.96		
v/c Ratio		0.98	0.11					0.53		1.55	0.56	
Uniform Delay, d1		27.3	20.8					8.0		14.2	8.2	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		19.4	0.0					0.1		268.1	0.2	
Delay (s)		46.7	20.8					8.2		282.3	8.4	
Level of Service		D	C					A		F	A	
Approach Delay (s)		45.1			0.0			8.2			69.8	
Approach LOS		D			A			A			E	

Intersection Summary

HCM Average Control Delay	44.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
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	64	221	90	45	609	0	0	996	201
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	4.2
Lane Util. Factor					0.95		1.00	0.95			0.95	1.00
Frt					0.96		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3721		1770	3539			3539	1583
Flt Permitted					0.99		0.16	1.00			1.00	1.00
Satd. Flow (perm)					3721		304	3539			3539	1583
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)	0	0	0	70	240	98	49	662	0	0	1083	218
RTOR Reduction (vph)	0	0	0	0	50	0	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	0	0	358	0	49	662	0	0	1083	101
Turn Type				Split			Perm					Perm
Protected Phases				2	2			4			4	
Permitted Phases							4					4
Actuated Green, G (s)					23.0		27.2	27.2			27.2	27.2
Effective Green, g (s)					23.0		27.2	27.2			27.2	27.2
Actuated g/C Ratio					0.39		0.46	0.46			0.46	0.46
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)					1460		141	1643			1643	735
v/s Ratio Prot					c0.10			0.19			c0.31	
v/s Ratio Perm							0.16					0.06
v/c Ratio					0.24		0.35	0.40			0.66	0.14
Uniform Delay, d1					12.0		10.0	10.3			12.1	9.0
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					0.0		0.5	0.1			0.7	0.0
Delay (s)					12.0		10.6	10.4			12.9	9.0
Level of Service					B		B	B			B	A
Approach Delay (s)		0.0			12.0			10.4			12.2	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	82.0%	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	57	693	262	94	1442	0	0	1307	476
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			0.91	
Frt					0.96		1.00	1.00			0.96	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					3731		1770	3539			4882	
Flt Permitted					1.00		0.11	1.00			1.00	
Satd. Flow (perm)					3731		197	3539			4882	
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)	0	0	0	62	753	285	102	1567	0	0	1421	517
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	1086	0	102	1567	0	0	1912	0
Turn Type				Split			Perm					
Protected Phases				2	2			4			4	
Permitted Phases							4					
Actuated Green, G (s)					23.5		37.8	37.8			37.8	
Effective Green, g (s)					23.5		37.8	37.8			37.8	
Actuated g/C Ratio					0.34		0.54	0.54			0.54	
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)					1258		107	1919			2648	
v/s Ratio Prot					c0.29			0.44			0.39	
v/s Ratio Perm							c0.52					
v/c Ratio					0.86		0.95	0.82			0.72	
Uniform Delay, d1					21.6		15.1	13.1			12.0	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					6.1		71.2	2.7			0.8	
Delay (s)					27.7		86.3	15.8			12.8	
Level of Service					C		F	B			B	
Approach Delay (s)		0.0			27.7			20.1			12.8	
Approach LOS		A			C			C			B	

Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.1%	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)	158	183	295	99	180	53	300	387	32	68	856	224
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
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		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	1863	1583	1770	1799		1770	5027		1770	3539	1583
Flt Permitted	0.42	1.00	1.00	0.51	1.00		0.27	1.00		0.48	1.00	1.00
Satd. Flow (perm)	778	1863	1583	957	1799		500	5027		894	3539	1583
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)	172	199	321	108	196	58	326	421	35	74	930	243
RTOR Reduction (vph)	0	0	126	0	10	0	0	10	0	0	0	84
Lane Group Flow (vph)	172	199	195	108	244	0	326	446	0	74	930	159
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4			4		4
Actuated Green, G (s)	25.3	25.3	25.3	25.3	25.3		65.5	65.5		65.5	65.5	65.5
Effective Green, g (s)	25.3	25.3	25.3	25.3	25.3		65.5	65.5		65.5	65.5	65.5
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25		0.66	0.66		0.66	0.66	0.66
Clearance Time (s)	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
Lane Grp Cap (vph)	197	472	401	243	456		328	3299		587	2323	1039
v/s Ratio Prot		0.11			0.14			0.09			0.26	
v/s Ratio Perm	c0.22		0.12	0.11			c0.65			0.08		0.10
v/c Ratio	0.87	0.42	0.49	0.44	0.53		0.99	0.14		0.13	0.40	0.15
Uniform Delay, d1	35.7	31.1	31.7	31.3	32.2		17.0	6.5		6.4	8.0	6.6
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	31.2	0.2	0.3	0.5	0.6		47.7	0.0		0.0	0.0	0.0
Delay (s)	66.9	31.4	32.1	31.8	32.8		64.7	6.5		6.5	8.0	6.6
Level of Service	E	C	C	C	C		E	A		A	A	A
Approach Delay (s)		40.5			32.5			30.7			7.7	
Approach LOS		D			C			C			A	

Intersection Summary

HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
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)	308	427	449	173	339	94	385	1182	166	56	1161	285
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
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		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	1863	1583	1770	1802		1770	4992		1770	3539	1583
Flt Permitted	0.26	1.00	1.00	0.27	1.00		0.13	1.00		0.12	1.00	1.00
Satd. Flow (perm)	483	1863	1583	495	1802		238	4992		224	3539	1583
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)	335	464	488	188	368	102	418	1285	180	61	1262	310
RTOR Reduction (vph)	0	0	30	0	9	0	0	17	0	0	0	107
Lane Group Flow (vph)	335	464	458	188	461	0	418	1448	0	61	1262	203
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		2			2			4			4	
Permitted Phases	2	2	2	2			4			4		4
Actuated Green, G (s)	41.5	41.5	41.5	41.5	41.5		59.5	59.5		59.5	59.5	59.5
Effective Green, g (s)	41.5	41.5	41.5	41.5	41.5		59.5	59.5		59.5	59.5	59.5
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38		0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	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
Lane Grp Cap (vph)	182	703	597	187	680		129	2700		121	1914	856
v/s Ratio Prot		0.25			0.26			0.29			0.36	
v/s Ratio Perm	c0.69		0.29	0.38			c1.76			0.27		0.13
v/c Ratio	1.84	0.66	0.77	1.01	0.68		3.24	0.54		0.50	0.66	0.24
Uniform Delay, d1	34.2	28.4	30.0	34.2	28.7		25.2	16.3		15.9	18.0	13.3
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	398.8	1.8	5.3	67.2	2.1		1027.9	0.1		1.2	0.6	0.1
Delay (s)	433.1	30.2	35.3	101.5	30.8		1053.2	16.4		17.1	18.7	13.4
Level of Service	F	C	D	F	C		F	B		B	B	B
Approach Delay (s)		137.0			51.0			246.6			17.6	
Approach LOS		F			D			F			B	

Intersection Summary

HCM Average Control Delay	128.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
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	117	13	629	202	367	355	533	47	80	144	277
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	1835		1681	1724	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.29	1.00		0.67	0.76	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	537	1835		1180	1341	1583	1770	2787	1583	1770	3433	1583
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)	9	127	14	684	220	399	386	579	51	87	157	301
RTOR Reduction (vph)	0	5	0	0	0	235	0	0	33	0	0	255
Lane Group Flow (vph)	9	136	0	431	473	164	386	579	18	87	157	46
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)	30.8	30.8		30.8	30.8	30.8	19.6	24.2	24.2	6.9	11.5	11.5
Effective Green, g (s)	30.8	30.8		30.8	30.8	30.8	19.6	24.2	24.2	6.9	11.5	11.5
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.26	0.32	0.32	0.09	0.15	0.15
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)	220	753		484	550	649	462	898	510	163	526	242
v/s Ratio Prot		0.07					c0.22	c0.21		0.05	0.05	
v/s Ratio Perm	0.02			c0.37	0.35	0.10			0.01			0.03
v/c Ratio	0.04	0.18		0.89	0.86	0.25	0.84	0.64	0.04	0.53	0.30	0.19
Uniform Delay, d1	13.3	14.1		20.6	20.2	14.6	26.2	21.8	17.5	32.6	28.2	27.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		18.5	13.0	0.2	12.3	2.1	0.1	1.7	0.6	0.7
Delay (s)	13.4	14.2		39.1	33.2	14.8	38.6	23.9	17.5	34.2	28.8	28.5
Level of Service	B	B		D	C	B	D	C	B	C	C	C
Approach Delay (s)		14.2			29.5		29.1				29.5	
Approach LOS		B			C		C				C	

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	8.6
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
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)	12	247	43	792	44	424	412	606	13	17	749	797
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	0.98		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	1821		1681	1694	1583	1770	2787	1583	1770	3433	1583
Flt Permitted	0.30	1.00		0.46	0.45	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	561	1821		815	789	1583	1770	2787	1583	1770	3433	1583
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)	13	268	47	861	48	461	448	659	14	18	814	866
RTOR Reduction (vph)	0	4	0	0	0	253	0	0	4	0	0	286
Lane Group Flow (vph)	13	311	0	448	461	208	448	659	10	18	814	580
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)	68.4	68.4		68.4	68.4	68.4	31.0	65.8	65.8	4.2	39.0	39.0
Effective Green, g (s)	68.4	68.4		68.4	68.4	68.4	31.0	65.8	65.8	4.2	39.0	39.0
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.20	0.43	0.43	0.03	0.26	0.26
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)	253	822		368	356	714	362	1210	687	49	883	407
v/s Ratio Prot		0.17					c0.25	0.24		0.01	0.24	
v/s Ratio Perm	0.02			0.55	c0.58	0.13			0.01			c0.37
v/c Ratio	0.05	0.38		1.22	1.29	0.29	1.24	0.54	0.01	0.37	0.92	1.43
Uniform Delay, d1	23.4	27.5		41.6	41.6	26.3	60.3	31.8	24.4	72.4	54.8	56.3
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	0.1	0.3		120.1	152.1	0.3	128.5	0.8	0.0	1.7	15.3	205.2
Delay (s)	23.5	27.8		161.7	193.7	26.6	188.8	32.6	24.5	74.1	70.1	261.5
Level of Service	C	C		F	F	C	F	C	C	E	E	F
Approach Delay (s)		27.6			127.0		94.9				167.7	
Approach LOS		C			F		F				F	

Intersection Summary

HCM Average Control Delay	127.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
47: Broadway St & H St

4/9/2012

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	15	64	83	691	311	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	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	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	0.70	1.00	0.55	1.00	1.00	1.00
Satd. Flow (perm)	1301	1583	1021	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	70	90	751	338	30
RTOR Reduction (vph)	0	53	0	0	0	12
Lane Group Flow (vph)	16	17	90	751	338	18
Turn Type		custom	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	13.6	13.6	33.6	33.6	33.6	33.6
Effective Green, g (s)	13.6	13.6	33.6	33.6	33.6	33.6
Actuated g/C Ratio	0.24	0.24	0.60	0.60	0.60	0.60
Clearance Time (s)	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
Lane Grp Cap (vph)	315	383	610	2116	2116	946
v/s Ratio Prot				c0.21	0.10	
v/s Ratio Perm	c0.01	0.01	0.09			0.01
v/c Ratio	0.05	0.04	0.15	0.35	0.16	0.02
Uniform Delay, d1	16.3	16.3	5.0	5.8	5.0	4.6
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)	16.4	16.3	5.0	5.8	5.0	4.6
Level of Service	B	B	A	A	A	A
Approach Delay (s)	16.3			5.7	5.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	56.2	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
47: Broadway St & H St

4/9/2012

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	360	244	33	767	583	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	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	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	0.73	1.00	0.36	1.00	1.00	1.00
Satd. Flow (perm)	1367	1583	671	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	265	36	834	634	46
RTOR Reduction (vph)	0	93	0	0	0	26
Lane Group Flow (vph)	391	172	36	834	634	20
Turn Type		custom	Perm			Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	25.0	25.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.0	25.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	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	4.5
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	570	660	291	1534	1534	686
v/s Ratio Prot				c0.24	0.18	
v/s Ratio Perm	c0.29	0.11	0.05			0.01
v/c Ratio	0.69	0.26	0.12	0.54	0.41	0.03
Uniform Delay, d1	14.3	11.5	10.2	12.6	11.7	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.1	0.1	0.2	0.1	0.0
Delay (s)	17.0	11.5	10.2	12.8	11.8	9.8
Level of Service	B	B	B	B	B	A
Approach Delay (s)	14.8			12.7	11.7	
Approach LOS	B			B	B	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.8%	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)	31	100	0	0	447	243	541	451	575	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			0.95			0.94				
Flt Protected		0.99			1.00			0.98				
Satd. Flow (prot)		3498			3352			4724				
Flt Permitted		0.77			1.00			0.98				
Satd. Flow (perm)		2739			3352			4724				
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)	34	109	0	0	486	264	588	490	625	0	0	0
RTOR Reduction (vph)	0	0	0	0	131	0	0	193	0	0	0	0
Lane Group Flow (vph)	0	143	0	0	619	0	0	1510	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			25.2				
Effective Green, g (s)		19.0			19.0			25.2				
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)		960			1175			2196				
v/s Ratio Prot					c0.18			c0.32				
v/s Ratio Perm		0.05										
v/c Ratio		0.15			0.53			0.69				
Uniform Delay, d1		12.1			14.0			11.4				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.0			0.2			0.7				
Delay (s)		12.1			14.2			12.1				
Level of Service		B			B			B				
Approach Delay (s)		12.1			14.2			12.1			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.0%	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)	32	156	0	0	308	197	389	356	531	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			0.94			0.94				
Flt Protected		0.99			1.00			0.98				
Satd. Flow (prot)		3509			3332			4696				
Flt Permitted		0.83			1.00			0.98				
Satd. Flow (perm)		2939			3332			4696				
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)	35	170	0	0	335	214	423	387	577	0	0	0
RTOR Reduction (vph)	0	0	0	0	139	0	0	237	0	0	0	0
Lane Group Flow (vph)	0	205	0	0	410	0	0	1150	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)		1034			1172			2174				
v/s Ratio Prot					c0.12			c0.24				
v/s Ratio Perm		0.07										
v/c Ratio		0.20			0.35			0.53				
Uniform Delay, d1		12.2			12.9			10.3				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.0			0.1			0.1				
Delay (s)		12.2			13.0			10.4				
Level of Service		B			B			B				
Approach Delay (s)		12.2			13.0			10.4			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.8%	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)	108	738	0	0	76	71	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	0.92	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	802	0	0	83	77	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	0	0	0	0
Lane Group Flow (vph)	117	802	0	0	83	9	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)	30.6	30.6			5.5	5.5						
Effective Green, g (s)	30.6	30.6			5.5	5.5						
Actuated g/C Ratio	0.68	0.68			0.12	0.12						
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)	1206	1270			228	194						
v/s Ratio Prot	0.07	c0.43			c0.04							
v/s Ratio Perm						0.01						
v/c Ratio	0.10	0.63			0.36	0.05						
Uniform Delay, d1	2.4	4.0			18.1	17.4						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.0	1.1			0.4	0.0						
Delay (s)	2.5	5.1			18.5	17.4						
Level of Service	A	A			B	B						
Approach Delay (s)		4.8			18.0			0.0			0.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	8.8
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)	507	390	0	0	436	100	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	0.92	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)	551	424	0	0	474	109	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	69	0	0	0	0	0	0
Lane Group Flow (vph)	551	424	0	0	474	40	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)	28.0	28.0			21.3	21.3						
Effective Green, g (s)	28.0	28.0			21.3	21.3						
Actuated g/C Ratio	0.48	0.48			0.37	0.37						
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)	853	898			683	580						
v/s Ratio Prot	c0.31	0.23			c0.25							
v/s Ratio Perm						0.03						
v/c Ratio	0.65	0.47			0.69	0.07						
Uniform Delay, d1	11.3	10.1			15.6	12.0						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	1.8	0.5			2.5	0.0						
Delay (s)	13.2	10.6			18.1	12.0						
Level of Service	B	B			B	B						
Approach Delay (s)		12.0			17.0			0.0			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
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)	350	367	0	0	273	67	42	401	100	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			0.97		1.00	0.97				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1808		1770	1807				
Flt Permitted	0.47	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	878	1863			1808		1770	1807				
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)	380	399	0	0	297	73	46	436	109	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	15	0	0	0	0
Lane Group Flow (vph)	380	399	0	0	355	0	46	530	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	28.5	28.5			28.5		22.0	22.0				
Effective Green, g (s)	28.5	28.5			28.5		22.0	22.0				
Actuated g/C Ratio	0.48	0.48			0.48		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)	425	901			875		661	675				
v/s Ratio Prot		0.21			0.20		0.03	c0.29				
v/s Ratio Perm	c0.43											
v/c Ratio	0.89	0.44			0.41		0.07	0.79				
Uniform Delay, d1	13.8	10.0			9.8		11.9	16.4				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	20.2	0.1			0.1		0.0	5.5				
Delay (s)	34.0	10.1			9.9		11.9	21.9				
Level of Service	C	B			A		B	C				
Approach Delay (s)		21.8			9.9			21.1			0.0	
Approach LOS		C			A			C			A	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
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)	359	323	0	0	609	115	46	291	133	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	0.95				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1818		1770	1775				
Flt Permitted	0.27	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	498	1863			1818		1770	1775				
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)	390	351	0	0	662	125	50	316	145	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	14	0	0	0	0
Lane Group Flow (vph)	390	351	0	0	781	0	50	447	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	84.8	84.8			84.8		26.8	26.8				
Effective Green, g (s)	84.8	84.8			84.8		26.8	26.8				
Actuated g/C Ratio	0.71	0.71			0.71		0.22	0.22				
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)	352	1317			1285		395	396				
v/s Ratio Prot		0.19			0.43		0.03	c0.25				
v/s Ratio Perm	c0.78											
v/c Ratio	1.11	0.27			0.61		0.13	1.13				
Uniform Delay, d1	17.6	6.4			9.1		37.2	46.6				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	80.3	0.0			0.6		0.1	85.1				
Delay (s)	97.9	6.4			9.6		37.3	131.7				
Level of Service	F	A			A		D	F				
Approach Delay (s)		54.6			9.6			122.5			0.0	
Approach LOS		D			A			F			A	

Intersection Summary

HCM Average Control Delay	54.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	0	60	317	306	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	0.93			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3278			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3278			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	65	345	333	0	0
RTOR Reduction (vph)	0	58	140	0	0	0
Lane Group Flow (vph)	0	7	538	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		2.8	15.4			
Effective Green, g (s)		2.8	15.4			
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)		170	1898			
v/s Ratio Prot			c0.16			
v/s Ratio Perm		c0.00				
v/c Ratio		0.04	0.28			
Uniform Delay, d1		10.7	2.8			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.2			
Delay (s)		10.7	3.1			
Level of Service		B	A			
Approach Delay (s)	10.7		3.1		0.0	
Approach LOS	B		A		A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	26.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	29.3%	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	266	586	267	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	0.95			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1611	3373			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1611	3373			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	289	637	290	0	0
RTOR Reduction (vph)	0	106	77	0	0	0
Lane Group Flow (vph)	0	183	850	0	0	0
Turn Type		custom				
Protected Phases			8			
Permitted Phases		2				
Actuated Green, G (s)		6.5	18.9			
Effective Green, g (s)		6.5	18.9			
Actuated g/C Ratio		0.19	0.56			
Clearance Time (s)		4.2	4.2			
Vehicle Extension (s)		0.2	6.0			
Lane Grp Cap (vph)		310	1886			
v/s Ratio Prot			c0.25			
v/s Ratio Perm		c0.11				
v/c Ratio		0.59	0.45			
Uniform Delay, d1		12.4	4.4			
Progression Factor		1.00	1.00			
Incremental Delay, d2		2.0	0.5			
Delay (s)		14.4	4.9			
Level of Service		B	A			
Approach Delay (s)	14.4		4.9		0.0	
Approach LOS	B		A		A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	33.8	Sum of lost time (s)	8.4
Intersection Capacity Utilization	48.2%	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	90	262	516	0	0	0	25	904	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			0.91					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3266			3207					1770	3497	
Flt Permitted		1.00			0.88					0.95	1.00	
Satd. Flow (perm)		3266			2822					1770	3497	
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)	0	127	135	98	285	561	0	0	0	27	983	86
RTOR Reduction (vph)	0	94	0	0	316	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	168	0	0	628	0	0	0	0	27	1060	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		14.0			14.0					4.0	21.4	
Effective Green, g (s)		14.0			14.0					4.0	21.4	
Actuated g/C Ratio		0.30			0.30					0.09	0.46	
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)		990			855					153	1620	
v/s Ratio Prot		0.05								0.02	c0.30	
v/s Ratio Perm					c0.22							
v/c Ratio		0.17			0.73					0.18	0.65	
Uniform Delay, d1		11.8			14.4					19.6	9.6	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		0.0			2.8					0.6	0.7	
Delay (s)		11.9			17.3					20.1	10.3	
Level of Service		B			B					C	B	
Approach Delay (s)		11.9			17.3			0.0			10.5	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	46.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	74.7%	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)	0	141	337	108	159	414	0	0	0	60	2252	98
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			0.91					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3165			3191					1770	3517	
Flt Permitted		1.00			0.63					0.95	1.00	
Satd. Flow (perm)		3165			2030					1770	3517	
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)	0	153	366	117	173	450	0	0	0	65	2448	107
RTOR Reduction (vph)	0	38	0	0	185	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	481	0	0	555	0	0	0	0	65	2553	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		38.6			38.6					55.6	97.2	
Effective Green, g (s)		38.6			38.6					55.6	97.2	
Actuated g/C Ratio		0.26			0.26					0.38	0.66	
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)		833			535					671	2332	
v/s Ratio Prot		0.15								0.04	c0.73	
v/s Ratio Perm					c0.27							
v/c Ratio		0.58			1.04					0.10	1.09	
Uniform Delay, d1		46.9			54.0					29.3	24.7	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		0.6			49.0					0.0	50.3	
Delay (s)		47.5			103.0					29.3	75.0	
Level of Service		D			F					C	E	
Approach Delay (s)		47.5			103.0			0.0			73.8	
Approach LOS		D			F			A			E	

Intersection Summary

HCM Average Control Delay	75.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	146.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
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	137	496	10	159	0	52	464	557	115	634	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		4.0	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		0.88		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)		1644		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)		1644		1770	1863		1770	1863	1583	1770	1863	1583
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)	0	149	539	11	173	0	57	504	605	125	689	17
RTOR Reduction (vph)	0	145	0	0	0	0	0	0	377	0	0	3
Lane Group Flow (vph)	0	543	0	11	173	0	57	504	228	125	689	14
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)		29.5		0.7	34.2		3.1	32.4	32.4	7.0	36.3	36.3
Effective Green, g (s)		29.5		0.7	34.2		3.1	32.4	32.4	7.0	36.3	36.3
Actuated g/C Ratio		0.34		0.01	0.40		0.04	0.38	0.38	0.08	0.42	0.42
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)		564		14	741		64	702	596	144	786	668
v/s Ratio Prot		c0.33		c0.01	0.09		0.03	0.27		c0.07	c0.37	
v/s Ratio Perm									0.14			0.01
v/c Ratio		0.96		0.79	0.23		0.89	0.72	0.38	0.87	0.88	0.02
Uniform Delay, d1		27.7		42.6	17.2		41.3	22.9	19.5	39.0	22.8	14.5
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		28.3		130.6	0.1		74.9	2.9	0.1	38.7	10.5	0.0
Delay (s)		56.1		173.1	17.3		116.1	25.8	19.7	77.7	33.3	14.5
Level of Service		E		F	B		F	C	B	E	C	B
Approach Delay (s)		56.1			26.6			27.0			39.6	
Approach LOS		E			C			C			D	

Intersection Summary

HCM Average Control Delay	37.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	88.9%	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	112	380	188	418	0	242	321	738	40	1396	342
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		0.88		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)		1647		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)		1647		1770	1863		1770	1863	1583	1770	1863	1583
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)	0	122	413	204	454	0	263	349	802	43	1517	372
RTOR Reduction (vph)	0	84	0	0	0	0	0	0	436	0	0	23
Lane Group Flow (vph)	0	451	0	204	454	0	263	349	366	43	1517	349
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)		28.8		14.0	46.8		15.0	61.6	61.6	24.8	71.6	71.6
Effective Green, g (s)		28.8		14.0	46.8		15.0	61.6	61.6	24.8	71.6	71.6
Actuated g/C Ratio		0.20		0.10	0.32		0.10	0.42	0.42	0.17	0.49	0.49
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)		325		170	598		182	787	669	301	915	777
v/s Ratio Prot		c0.27		c0.12	0.24		c0.15	0.19		0.02	c0.81	
v/s Ratio Perm									0.23			0.22
v/c Ratio		1.39		1.20	0.76		1.45	0.44	0.55	0.14	1.66	0.45
Uniform Delay, d1		58.5		65.9	44.4		65.4	29.9	31.6	51.5	37.1	24.2
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		192.1		133.0	4.9		228.4	0.1	0.5	0.1	300.9	0.2
Delay (s)		250.6		198.9	49.3		293.8	30.1	32.1	51.5	338.0	24.4
Level of Service		F		F	D		F	C	C	D	F	C
Approach Delay (s)		250.6			95.7			80.3			271.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	183.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	145.8	Sum of lost time (s)	16.4
Intersection Capacity Utilization	140.3%	ICU Level of Service	H
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	269	15	75	238	0	0	0	264	171	633	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	4.2			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)		1850		1770	1863			1583		1770	1845	
Flt Permitted		1.00		0.42	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1850		782	1863			1583		1770	1845	
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)	0	292	16	82	259	0	0	0	287	186	688	47
RTOR Reduction (vph)	0	2	0	0	0	0	0	212	0	0	2	0
Lane Group Flow (vph)	0	306	0	82	259	0	0	75	0	186	733	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)		612		259	617			412		460	1051	
v/s Ratio Prot		c0.17			0.14			0.05		0.11	c0.40	
v/s Ratio Perm				0.10								
v/c Ratio		0.50		0.32	0.42			0.18		0.40	0.70	
Uniform Delay, d1		22.7		21.1	22.0			24.3		25.9	13.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.2		0.3	0.2			0.1		0.2	1.6	
Delay (s)		22.9		21.4	22.2			24.4		26.1	14.6	
Level of Service		C		C	C			C		C	B	
Approach Delay (s)		22.9			22.0			24.4			17.0	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	99.8%	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	220	27	209	426	0	0	0	321	122	1539	83
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)		1836		1770	1863			1583		1770	1848	
Flt Permitted		1.00		0.41	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1836		760	1863			1583		1770	1848	
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)	0	239	29	227	463	0	0	0	349	133	1673	90
RTOR Reduction (vph)	0	3	0	0	0	0	0	192	0	0	1	0
Lane Group Flow (vph)	0	265	0	227	463	0	0	157	0	133	1762	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		39.8		39.8	39.8			60.6		22.0	86.8	
Effective Green, g (s)		39.8		39.8	39.8			60.6		22.0	86.8	
Actuated g/C Ratio		0.29		0.29	0.29			0.45		0.16	0.64	
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)		541		224	549			711		288	1188	
v/s Ratio Prot		0.14			0.25			0.10		0.08	c0.95	
v/s Ratio Perm				c0.30								
v/c Ratio		0.49		1.01	0.84			0.22		0.46	1.48	
Uniform Delay, d1		39.2		47.6	44.7			22.8		51.1	24.1	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3		63.6	10.9			0.1		0.4	222.0	
Delay (s)		39.5		111.2	55.6			22.8		51.6	246.1	
Level of Service		D		F	E			C		D	F	
Approach Delay (s)		39.5			73.9			22.8			232.4	
Approach LOS		D			E			C			F	

Intersection Summary

HCM Average Control Delay	159.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	149.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	294	1019	3	0	40	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			1833		1770	1863
Flt Permitted	0.95	1.00		1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787		1611			1833		1410	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	1108	3	0	43	25	51	0	105	111
RTOR Reduction (vph)	0	0	0	41	0	0	0	0	0	0
Lane Group Flow (vph)	320	1111	0	2	0	0	76	0	105	111
Turn Type		Prot				Split			Perm	
Protected Phases	2	2		3		1	1	4		4
Permitted Phases									4	
Actuated Green, G (s)	33.3	33.3		3.1			6.5		9.1	9.1
Effective Green, g (s)	33.3	33.3		3.1			6.5		9.1	9.1
Actuated g/C Ratio	0.48	0.48		0.04			0.09		0.13	0.13
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)	846	1332		72			171		184	243
v/s Ratio Prot	0.18	c0.40		c0.00			c0.04			0.06
v/s Ratio Perm									c0.07	
v/c Ratio	0.38	0.83		0.03			0.44		0.57	0.46
Uniform Delay, d1	11.6	15.8		31.9			29.9		28.5	28.0
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	4.9		0.1			0.7		5.0	1.9
Delay (s)	12.0	20.7		31.9			30.6		33.5	29.9
Level of Service	B	C		C			C		C	C
Approach Delay (s)	18.7			31.9			30.6	0.0		31.6
Approach LOS	B			C			C	A		C

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	17.7
Intersection Capacity Utilization	63.2%	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)	452	1307	5	0	67	15	26	0	114	191
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			1829		1770	1863
Flt Permitted	0.95	1.00		1.00			0.98		0.76	1.00
Satd. Flow (perm)	1770	2787		1611			1829		1410	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	491	1421	5	0	73	16	28	0	124	208
RTOR Reduction (vph)	0	0	0	69	0	0	0	0	0	0
Lane Group Flow (vph)	491	1426	0	4	0	0	44	0	124	208
Turn Type		Prot				Split			Perm	
Protected Phases	2	2		3		1	1	4		4
Permitted Phases									4	
Actuated Green, G (s)	56.1	56.1		5.7			6.0		14.4	14.4
Effective Green, g (s)	56.1	56.1		5.7			6.0		14.4	14.4
Actuated g/C Ratio	0.56	0.56		0.06			0.06		0.14	0.14
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)	990	1559		92			109		202	267
v/s Ratio Prot	0.28	c0.51		c0.00			c0.02			c0.11
v/s Ratio Perm									0.09	
v/c Ratio	0.50	0.91		0.05			0.40		0.61	0.78
Uniform Delay, d1	13.5	19.9		44.7			45.4		40.3	41.4
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.5	8.8		0.3			0.9		6.2	14.1
Delay (s)	14.0	28.7		45.0			46.3		46.5	55.5
Level of Service	B	C		D			D		D	E
Approach Delay (s)	25.0			45.0			46.3	0.0		52.2
Approach LOS	C			D			D	A		D

Intersection Summary

HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	18.1
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
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)	135	375	21	72	94	50	225	74	473	22	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)	147	408	23	78	102	54	245	80	514	24	0
Approach Volume (veh/h)		577			235				863		0
Crossing Volume (veh/h)		323			986				554		554
High Capacity (veh/h)		1075			630				894		894
High v/c (veh/h)		0.54			0.37				0.97		0.00
Low Capacity (veh/h)		881			489				719		719
Low v/c (veh/h)		0.66			0.48				1.20		0.00

Intersection Summary				
Maximum v/c High	0.97			
Maximum v/c Low	1.20			
Intersection Capacity Utilization	63.6%	ICU Level of Service		B

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)	262	296	8	113	263	182	237	266	1577	29	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)	285	322	9	123	286	198	258	289	1714	32	0
Approach Volume (veh/h)		615			607				2292		0
Crossing Volume (veh/h)		380			2546#				607		607
High Capacity (veh/h)		1027			167				857		857
High v/c (veh/h)		0.60			3.64				2.67		0.00
Low Capacity (veh/h)		838			111				687		687
Low v/c (veh/h)		0.73			5.47				3.34		0.00

Intersection Summary			
Maximum v/c High	3.64		
Maximum v/c Low	5.47		
Intersection Capacity Utilization	127.6%	ICU Level of Service	H

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	425	40	0	328	0	0	0	0	105	1274	172
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)		3494			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3494			3539					1770	3539	1583
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)	0	462	43	0	357	0	0	0	0	114	1385	187
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	55
Lane Group Flow (vph)	0	496	0	0	357	0	0	0	0	114	1385	132
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		27.0			27.0					28.6	28.6	28.6
Effective Green, g (s)		27.0			27.0					28.6	28.6	28.6
Actuated g/C Ratio		0.42			0.42					0.44	0.44	0.44
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)		1451			1470					779	1557	697
v/s Ratio Prot		c0.14			0.10					0.06	c0.39	
v/s Ratio Perm												0.08
v/c Ratio		0.34			0.24					0.15	0.89	0.19
Uniform Delay, d1		12.9			12.4					10.9	16.7	11.1
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.3			0.2					0.2	7.1	0.3
Delay (s)		13.2			12.5					11.1	23.9	11.4
Level of Service		B			B					B	C	B
Approach Delay (s)		13.2			12.5			0.0			21.6	
Approach LOS		B			B			A			C	

Intersection Summary

HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
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	440	74	0	1089	0	0	0	0	119	1684	298
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		0.98			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3463			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3463			3539					1770	3539	1583
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)	0	478	80	0	1184	0	0	0	0	129	1830	324
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	5
Lane Group Flow (vph)	0	551	0	0	1184	0	0	0	0	129	1830	319
Turn Type										Split		Perm
Protected Phases		4			4					2	2	
Permitted Phases												2
Actuated Green, G (s)		27.8			27.8					42.8	42.8	42.8
Effective Green, g (s)		27.8			27.8					42.8	42.8	42.8
Actuated g/C Ratio		0.35			0.35					0.53	0.53	0.53
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)		1203			1230					947	1893	847
v/s Ratio Prot		0.16			c0.33					0.07	c0.52	
v/s Ratio Perm												0.20
v/c Ratio		0.46			0.96					0.14	0.97	0.38
Uniform Delay, d1		20.3			25.6					9.3	17.9	10.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6			17.6					0.1	13.8	0.6
Delay (s)		20.8			43.2					9.5	31.7	11.4
Level of Service		C			D					A	C	B
Approach Delay (s)		20.8			43.2			0.0			27.6	
Approach LOS		C			D			A			C	

Intersection Summary

HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
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)	6	703	346	10	9	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	764	376	11	10	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)						
pX, platoon unblocked						
vC, conflicting volume	387				1159	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387				1159	382
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)	1172				215	666

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	771	387	17
Volume Left	7	0	10
Volume Right	0	11	8
cSH	1172	1700	306
Volume to Capacity	0.01	0.23	0.06
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.1	0.0	17.5
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	17.5
Approach LOS			C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.8%	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)	5	777	590	4	4	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	845	641	4	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	646				1499	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	646				1499	643
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				97	100
cM capacity (veh/h)	940				134	473

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	850	646	7
Volume Left	5	0	4
Volume Right	0	4	2
cSH	940	1700	176
Volume to Capacity	0.01	0.38	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.2	0.0	26.3
Lane LOS	A		D
Approach Delay (s)	0.2	0.0	26.3
Approach LOS			D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

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)	31	443	317	7	277	23	2	11	14	35	259	85
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	0.96	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3528	1583		3495		1770	1708		1770	1794	
Flt Permitted		0.92	1.00		0.94		0.38	1.00		0.74	1.00	
Satd. Flow (perm)		3243	1583		3300		710	1708		1378	1794	
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)	34	482	345	8	301	25	2	12	15	38	282	92
RTOR Reduction (vph)	0	0	165	0	10	0	0	10	0	0	19	0
Lane Group Flow (vph)	0	516	180	0	324	0	2	17	0	38	355	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)		30.6	30.6		30.6		18.6	18.6		18.6	18.6	
Effective Green, g (s)		30.6	30.6		30.6		18.6	18.6		18.6	18.6	
Actuated g/C Ratio		0.51	0.51		0.51		0.31	0.31		0.31	0.31	
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)		1654	807		1683		220	529		427	556	
v/s Ratio Prot								0.01			c0.20	
v/s Ratio Perm		c0.16	0.11		0.10		0.00			0.03		
v/c Ratio		0.31	0.22		0.19		0.01	0.03		0.09	0.64	
Uniform Delay, d1		8.6	8.1		8.0		14.3	14.4		14.7	17.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.1		0.0		0.0	0.0		0.0	1.8	
Delay (s)		8.6	8.2		8.0		14.3	14.4		14.7	19.6	
Level of Service		A	A		A		B	B		B	B	
Approach Delay (s)		8.4			8.0			14.4			19.1	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
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)	177	447	263	22	1018	203	18	32	22	55	304	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)		5.4	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		0.98		1.00	0.94		1.00	0.95	
Flt Protected		0.99	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3490	1583		3449		1770	1749		1770	1771	
Flt Permitted		0.54	1.00		0.94		0.22	1.00		0.72	1.00	
Satd. Flow (perm)		1897	1583		3232		408	1749		1338	1771	
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)	192	486	286	24	1107	221	20	35	24	60	330	162
RTOR Reduction (vph)	0	0	134	0	27	0	0	17	0	0	30	0
Lane Group Flow (vph)	0	678	152	0	1325	0	20	42	0	60	462	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)		30.6	30.6		30.6		18.6	18.6		18.6	18.6	
Effective Green, g (s)		30.6	30.6		30.6		18.6	18.6		18.6	18.6	
Actuated g/C Ratio		0.51	0.51		0.51		0.31	0.31		0.31	0.31	
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)		967	807		1648		126	542		415	549	
v/s Ratio Prot								0.02			c0.26	
v/s Ratio Perm		0.36	0.10		c0.41		0.05			0.04		
v/c Ratio		1.55dl	0.19		0.80		0.16	0.08		0.14	0.84	
Uniform Delay, d1		11.2	8.0		12.2		15.0	14.6		15.0	19.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.0		2.8		0.2	0.0		0.1	10.8	
Delay (s)		13.1	8.0		15.0		15.2	14.7		15.0	30.1	
Level of Service		B	A		B		B	B		B	C	
Approach Delay (s)		11.6			15.0			14.8			28.5	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		

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

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)	49	666	338	17	43	57
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	724	367	18	47	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	386				1207	377
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	386				1207	377
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				76	91
cM capacity (veh/h)	1173				193	670

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	777	386	109
Volume Left	53	0	47
Volume Right	0	18	62
cSH	1173	1700	325
Volume to Capacity	0.05	0.23	0.33
Queue Length 95th (ft)	4	0	36
Control Delay (s)	1.2	0.0	21.5
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	21.5
Approach LOS			C

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
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)	118	719	538	60	69	240
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	128	782	585	65	75	261
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	650				1655	617
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	650				1655	617
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				19	47
cM capacity (veh/h)	936				93	490

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	910	650	336
Volume Left	128	0	75
Volume Right	0	65	261
cSH	936	1700	251
Volume to Capacity	0.14	0.38	1.34
Queue Length 95th (ft)	12	0	443
Control Delay (s)	3.4	0.0	215.7
Lane LOS	A		F
Approach Delay (s)	3.4	0.0	215.7
Approach LOS			F

Intersection Summary			
Average Delay	39.9		
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
61: E Divisadero St & G St

4/9/2012

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Lane Configurations												
Volume (vph)	55	120	36	596	600	168	5	173	205	270	125	323
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		4.9	4.9		4.9	4.9	4.9	4.5	4.5	
Lane Util. Factor		0.97		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt		0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.85	
Flt Protected		0.96		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3381		1770	3423		1770	1863	1583	1770	1583	
Flt Permitted		0.62		0.64	1.00		0.30	1.00	1.00	0.61	1.00	
Satd. Flow (perm)		2171		1191	3423		556	1863	1583	1140	1583	
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)	60	130	39	648	652	183	5	188	223	293	136	351
RTOR Reduction (vph)	0	28	0	0	40	0	0	0	97	0	143	0
Lane Group Flow (vph)	0	201	0	648	795	0	5	188	126	293	344	0
Turn Type	Perm			Perm			Perm		Perm		Over	
Protected Phases		4			2			2			4	
Permitted Phases	4			2			2		2	4		
Actuated Green, G (s)		18.8		36.6	36.6		36.6	36.6	36.6	18.8	18.8	
Effective Green, g (s)		18.8		36.6	36.6		36.6	36.6	36.6	18.8	18.8	
Actuated g/C Ratio		0.29		0.56	0.56		0.56	0.56	0.56	0.29	0.29	
Clearance Time (s)		4.5		4.9	4.9		4.9	4.9	4.9	4.5	4.5	
Vehicle Extension (s)		5.0		4.0	4.0		4.0	4.0	4.0	5.0	5.0	
Lane Grp Cap (vph)		630		673	1933		314	1052	894	331	459	
v/s Ratio Prot					0.23			0.10			0.22	
v/s Ratio Perm		0.09		c0.54			0.01		0.08	c0.26		
v/c Ratio		0.32		0.96	0.41		0.02	0.18	0.14	0.89	0.75	
Uniform Delay, d1		18.0		13.5	8.0		6.2	6.8	6.7	22.0	20.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.6		25.8	0.2		0.0	0.1	0.1	24.8	7.9	
Delay (s)		18.6		39.2	8.2		6.2	6.9	6.8	46.8	28.7	
Level of Service		B		D	A		A	A	A	D	C	
Approach Delay (s)		18.6			21.7			6.8		35.5		
Approach LOS		B			C			A		D		

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	9.4
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
61: E Divisadero St & G St

4/9/2012

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Lane Configurations												
Volume (vph)	90	117	33	394	606	86	21	806	449	410	79	796
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		4.9	4.9		4.9	4.9	4.9	4.5	4.5	
Lane Util. Factor		0.97		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt		0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.85	
Flt Protected		0.96		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3393		1770	3474		1770	1863	1583	1770	1583	
Flt Permitted		0.57		0.18	1.00		0.33	1.00	1.00	0.54	1.00	
Satd. Flow (perm)		2033		327	3474		609	1863	1583	1006	1583	
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)	98	127	36	428	659	93	23	876	488	446	86	865
RTOR Reduction (vph)	0	8	0	0	8	0	0	0	147	0	128	0
Lane Group Flow (vph)	0	253	0	428	744	0	23	876	341	446	823	0
Turn Type	Perm			Perm			Perm		Perm		Over	
Protected Phases		4			2			2			4	
Permitted Phases	4			2			2		2	4		
Actuated Green, G (s)		44.5		96.1	96.1		96.1	96.1	96.1	44.5	44.5	
Effective Green, g (s)		44.5		96.1	96.1		96.1	96.1	96.1	44.5	44.5	
Actuated g/C Ratio		0.30		0.64	0.64		0.64	0.64	0.64	0.30	0.30	
Clearance Time (s)		4.5		4.9	4.9		4.9	4.9	4.9	4.5	4.5	
Vehicle Extension (s)		5.0		4.0	4.0		4.0	4.0	4.0	5.0	5.0	
Lane Grp Cap (vph)		603		209	2226		390	1194	1014	298	470	
v/s Ratio Prot					0.21			0.47			c0.52	
v/s Ratio Perm		0.12		c1.31			0.04		0.22	0.44		
v/c Ratio		1.69dl		2.05	0.33		0.06	0.73	0.34	1.50	1.75	
Uniform Delay, d1		42.4		27.0	12.3		10.1	18.3	12.3	52.8	52.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.0		487.8	0.1		0.1	2.5	0.3	240.4	346.7	
Delay (s)		43.4		514.8	12.4		10.2	20.8	12.6	293.2	399.4	
Level of Service		D		F	B		B	C	B	F	F	
Approach Delay (s)		43.4			194.6			17.7		365.5		
Approach LOS		D			F			B		F		

Intersection Summary

HCM Average Control Delay	183.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		

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

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
62: E Divisadero St & N Roosevelt Ave.

4/9/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	410	108	206	618	98	328
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	446	117	224	672	107	357
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			387			273
pX, platoon unblocked						
vC, conflicting volume	793	224			896	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	793	224			896	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	86			86	
cM capacity (veh/h)	307	816			758	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	563	224	672	463
Volume Left	446	0	0	107
Volume Right	117	0	672	0
cSH	353	1700	1700	758
Volume to Capacity	1.60	0.13	0.40	0.14
Queue Length 95th (ft)	818	0	0	12
Control Delay (s)	308.1	0.0	0.0	3.9
Lane LOS	F			A
Approach Delay (s)	308.1	0.0		3.9
Approach LOS	F			

Intersection Summary			
Average Delay	91.2		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
62: E Divisadero St & N Roosevelt Ave.

4/9/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	647	385	321	706	0	652
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	703	418	349	767	0	709
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			375			274
pX, platoon unblocked						
vC, conflicting volume	1058	349			1116	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1058	349			1116	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	40			100	
cM capacity (veh/h)	249	694			626	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	1122	349	767	709
Volume Left	703	0	0	0
Volume Right	418	0	767	0
cSH	327	1700	1700	626
Volume to Capacity	3.43	0.21	0.45	0.00
Queue Length 95th (ft)	Err	0	0	0
Control Delay (s)	Err	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	Err	0.0		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	3806.3		
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

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)	635	96	10	350	459	1	42	284	0	42	3	719
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			0.98	0.85				1.00	0.85	0.86	0.93
Flt Protected	1.00			1.00	1.00				0.95	1.00	1.00	0.97
Satd. Flow (prot)	1830			1727	1504				3362	1583	1611	3274
Flt Permitted	1.00			0.73	1.00				0.95	1.00	1.00	0.46
Satd. Flow (perm)	1830			1257	1504				3362	1583	1611	1529
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)	690	104	11	380	499	1	46	309	0	46	3	782
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	0	40	3	0
Lane Group Flow (vph)	791	0	0	461	430	0	0	0	355	6	0	1465
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)	59.4			59.4	59.4				17.6	17.6	18.0	35.4
Effective Green, g (s)	59.4			59.4	59.4				17.6	17.6	18.0	35.4
Actuated g/C Ratio	0.47			0.47	0.47				0.14	0.14	0.14	0.28
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)	861			592	708				469	221	230	918
v/s Ratio Prot	c0.43										0.00	c0.45
v/s Ratio Perm				0.37	0.29				0.11	0.00		
v/c Ratio	0.92			0.78	0.61				1.44dl	0.03	0.00	1.60
Uniform Delay, d1	31.1			27.9	24.8				52.2	46.9	46.4	45.4
Progression Factor	1.00			1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2	15.2			7.5	2.2				7.3	0.1	0.0	273.3
Delay (s)	46.3			35.4	26.9				59.5	47.0	46.4	318.7
Level of Service	D			D	C				E	D	D	F
Approach Delay (s)	46.3			31.3					58.1			318.7
Approach LOS	D			C					E			F

Intersection Summary

HCM Average Control Delay	156.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	126.2	Sum of lost time (s)	13.8
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
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)	627	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	0.92	0.92
Adj. Flow (vph)	682	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)	661	40	223	1344	2	9	682	0	44	6	1	987
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	0.99		0.89	0.85				1.00	0.85	0.86		0.95
Flt Protected	1.00		1.00	1.00				0.95	1.00	1.00		0.97
Satd. Flow (prot)	1849		1578	1504				3362	1583	1611		3328
Flt Permitted	1.00		1.00	1.00				0.95	1.00	1.00		0.95
Satd. Flow (perm)	1849		1578	1504				3362	1583	1611		3287
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)	718	43	242	1461	2	10	741	0	48	7	1	1073
RTOR Reduction (vph)	1	0	0	0	0	0	0	0	32	6	0	0
Lane Group Flow (vph)	760	0	870	835	0	0	0	751	16	1	0	1574
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)	54.4		54.4	76.8				24.4	24.4	24.8		52.8
Effective Green, g (s)	54.4		54.4	76.8				24.4	24.4	24.8		52.8
Actuated g/C Ratio	0.36		0.36	0.51				0.16	0.16	0.17		0.35
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)	671		572	770				547	258	266		1165
v/s Ratio Prot	0.41		c0.55	0.16						0.00		c0.27
v/s Ratio Perm				0.39				0.22	0.01			c0.20
v/c Ratio	1.13		1.52	1.08				2.61dl	0.06	0.00		1.35
Uniform Delay, d1	47.8		47.8	36.6				62.8	53.1	52.3		51.8
Progression Factor	1.00		1.00	1.00				1.00	1.00	1.00		1.00
Incremental Delay, d2	77.2		243.3	57.7				179.2	0.1	0.0		163.7
Delay (s)	125.0		291.1	94.3				242.0	53.3	52.3		215.5
Level of Service	F		F	F				F	D	D		F
Approach Delay (s)	125.0		194.7					230.6				215.5
Approach LOS	F		F					F				F

Intersection Summary

HCM Average Control Delay	196.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	131.2%	ICU Level of Service	H
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)	454	6
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	0.92	0.92
Adj. Flow (vph)	493	7
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)	86	1021	258	15	620	31	157	299	151	20	31	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	0.95		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3526	1583		3510		1770	1769		1770	1815	
Flt Permitted		0.83	1.00		0.92		0.73	1.00		0.29	1.00	
Satd. Flow (perm)		2922	1583		3228		1360	1769		546	1815	
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)	93	1110	280	16	674	34	171	325	164	22	34	7
RTOR Reduction (vph)	0	0	116	0	6	0	0	30	0	0	4	0
Lane Group Flow (vph)	0	1203	164	0	718	0	171	459	0	22	37	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)		26.6	26.6		26.6		22.1	22.1		22.1	22.1	
Effective Green, g (s)		26.6	26.6		26.6		22.1	22.1		22.1	22.1	
Actuated g/C Ratio		0.46	0.46		0.46		0.38	0.38		0.38	0.38	
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)		1342	727		1483		519	675		208	693	
v/s Ratio Prot								c0.26			0.02	
v/s Ratio Perm		c0.41	0.10		0.22		0.13			0.04		
v/c Ratio		0.90	0.23		0.48		0.33	0.68		0.11	0.05	
Uniform Delay, d1		14.4	9.4		10.9		12.7	15.0		11.5	11.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.0	0.1		0.1		0.1	2.3		0.1	0.0	
Delay (s)		22.3	9.5		11.0		12.8	17.2		11.6	11.3	
Level of Service		C	A		B		B	B		B	B	
Approach Delay (s)		19.9			11.0			16.1			11.4	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
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)	75	1030	286	41	1187	158	153	228	85	297	297	33
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	0.96		1.00	0.98	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3527	1583		3473		1770	1787		1770	1835	
Flt Permitted		0.59	1.00		0.82		0.40	1.00		0.42	1.00	
Satd. Flow (perm)		2072	1583		2841		744	1787		785	1835	
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)	82	1120	311	45	1290	172	166	248	92	323	323	36
RTOR Reduction (vph)	0	0	83	0	11	0	0	15	0	0	4	0
Lane Group Flow (vph)	0	1202	228	0	1496	0	166	325	0	323	355	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)		46.4	46.4		46.4		34.4	34.4		34.4	34.4	
Effective Green, g (s)		46.4	46.4		46.4		34.4	34.4		34.4	34.4	
Actuated g/C Ratio		0.52	0.52		0.52		0.38	0.38		0.38	0.38	
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)		1068	816		1465		284	683		300	701	
v/s Ratio Prot								0.18			0.19	
v/s Ratio Perm		c0.58	0.14		0.53		0.22			c0.41		
v/c Ratio		1.13	0.28		1.02		0.58	0.48		1.08	0.51	
Uniform Delay, d1		21.8	12.3		21.8		22.1	21.0		27.8	21.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		68.9	0.1		29.0		2.0	0.2		73.9	0.2	
Delay (s)		90.7	12.4		50.8		24.1	21.2		101.7	21.5	
Level of Service		F	B		D		C	C		F	C	
Approach Delay (s)		74.6			50.8			22.1			59.5	
Approach LOS		E			D			C			E	

Intersection Summary

HCM Average Control Delay	57.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
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	1173	18	8	287	0	27	0	16	222	505	370
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		1.00			1.00		1.00		0.85	1.00	0.94	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3531			3534		1770		1583	1770	3315	
Flt Permitted		1.00			0.92		0.19		1.00	0.95	1.00	
Satd. Flow (perm)		3531			3244		350		1583	1770	3315	
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)	0	1275	20	9	312	0	29	0	17	241	549	402
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	10	0	222	0
Lane Group Flow (vph)	0	1293	0	0	321	0	29	0	7	241	729	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		26.2			26.2		24.1		24.1	24.1	24.1	
Effective Green, g (s)		26.2			26.2		24.1		24.1	24.1	24.1	
Actuated g/C Ratio		0.44			0.44		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)		1560			1433		142		643	719	1347	
v/s Ratio Prot		c0.37							0.00		c0.22	
v/s Ratio Perm					0.10		0.08			0.14		
v/c Ratio		0.83			0.22		0.20		0.01	0.34	0.54	
Uniform Delay, d1		14.6			10.3		11.4		10.5	12.1	13.4	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		3.6			0.0		0.3		0.0	0.1	0.2	
Delay (s)		18.2			10.3		11.7		10.5	12.2	13.6	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.2			10.3			11.2			13.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
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	1184	27	7	1073	0	30	0	43	270	221	332
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		1.00			1.00		1.00		0.85	1.00	0.91	
Flt Protected		1.00			1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3528			3538		1770		1583	1770	3220	
Flt Permitted		1.00			0.94		0.37		1.00	0.95	1.00	
Satd. Flow (perm)		3528			3342		690		1583	1770	3220	
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)	0	1287	29	8	1166	0	33	0	47	293	240	361
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	13	0	18	0
Lane Group Flow (vph)	0	1313	0	0	1174	0	33	0	34	293	583	0
Turn Type				Perm			D.Pm		custom	Perm		
Protected Phases		4			4				2		2	
Permitted Phases				4			2		2	2		
Actuated Green, G (s)		26.5			26.5		24.1		24.1	24.1	24.1	
Effective Green, g (s)		26.5			26.5		24.1		24.1	24.1	24.1	
Actuated g/C Ratio		0.44			0.44		0.40		0.40	0.40	0.40	
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)		1569			1486		279		640	716	1302	
v/s Ratio Prot		c0.37							0.02		c0.18	
v/s Ratio Perm					0.35		0.05			0.17		
v/c Ratio		0.84			0.79		0.12		0.05	0.41	0.45	
Uniform Delay, d1		14.6			14.2		11.1		10.8	12.7	12.9	
Progression Factor		1.00			1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		3.9			2.7		0.1		0.0	0.1	0.1	
Delay (s)		18.5			16.9		11.2		10.8	12.8	13.0	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.5			16.9			11.0			12.9	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
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)	398	720	239	6	226	44	60	129	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		0.97			0.98			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		3396			3451			3450				
Flt Permitted		0.75			0.92			0.99				
Satd. Flow (perm)		2580			3189			3450				
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)	433	783	260	7	246	48	65	140	16	0	0	0
RTOR Reduction (vph)	0	23	0	0	20	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1453	0	0	281	0	0	214	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		44.3			44.3			22.1				
Effective Green, g (s)		44.3			44.3			22.1				
Actuated g/C Ratio		0.59			0.59			0.29				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1522			1881			1015				
v/s Ratio Prot								c0.06				
v/s Ratio Perm		c0.56			0.09							
v/c Ratio		0.95			0.15			0.21				
Uniform Delay, d1		14.5			6.9			19.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		13.6			0.0			0.0				
Delay (s)		28.0			6.9			20.0				
Level of Service		C			A			B				
Approach Delay (s)		28.0			6.9			20.0			0.0	
Approach LOS		C			A			B			A	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	8.7
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
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)	800	508	165	9	897	108	178	459	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			0.98			1.00				
Flt Protected		0.97			1.00			0.99				
Satd. Flow (prot)		3388			3481			3478				
Flt Permitted		0.50			0.93			0.99				
Satd. Flow (perm)		1733			3242			3478				
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)	870	552	179	10	975	117	193	499	18	0	0	0
RTOR Reduction (vph)	0	7	0	0	7	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1594	0	0	1095	0	0	708	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		104.5			104.5			26.8				
Effective Green, g (s)		104.5			104.5			26.8				
Actuated g/C Ratio		0.75			0.75			0.19				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1294			2420			666				
v/s Ratio Prot								c0.20				
v/s Ratio Perm		c0.92			0.34							
v/c Ratio		2.69dl			0.45			1.06				
Uniform Delay, d1		17.8			6.8			56.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		111.3			0.0			53.0				
Delay (s)		129.1			6.8			109.6				
Level of Service		F			A			F				
Approach Delay (s)		129.1			6.8			109.6			0.0	
Approach LOS		F			A			F			A	

Intersection Summary

HCM Average Control Delay	85.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

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

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)	308	0	18	2	0	0	1	1331	292	140	516	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			4.2	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		0.99	
Satd. Flow (prot)	1770	1583			1770			3539	1583		3497	
Flt Permitted	0.76	1.00			0.74			0.95	1.00		0.51	
Satd. Flow (perm)	1409	1583			1386			3379	1583		1808	
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)	335	0	20	2	0	0	1	1447	317	152	561	7
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	100	0	0	0
Lane Group Flow (vph)	335	15	0	0	2	0	0	1448	217	0	720	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)	29.6	29.6			29.6			40.9	40.9		40.9	
Effective Green, g (s)	29.6	29.6			29.6			40.9	40.9		40.9	
Actuated g/C Ratio	0.37	0.37			0.37			0.52	0.52		0.52	
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)	526	591			517			1743	816		932	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.24				0.00			c0.43	0.14		0.40	
v/c Ratio	0.64	0.03			0.00			0.83	0.27		1.60dl	
Uniform Delay, d1	20.4	15.7			15.6			16.3	10.8		15.4	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	3.5	0.0			0.0			3.7	0.2		4.3	
Delay (s)	23.9	15.8			15.6			20.0	11.0		19.7	
Level of Service	C	B			B			B	B		B	
Approach Delay (s)		23.5			15.6			18.3			19.7	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	8.8
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

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

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)	674	0	23	0	2	0	1	1421	570	78	1144	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		3528	
Flt Permitted	0.76	1.00			1.00			0.95	1.00		0.52	
Satd. Flow (perm)	1409	1583			1863			3378	1583		1838	
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)	733	0	25	0	2	0	1	1545	620	85	1243	1
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	150	0	0	0
Lane Group Flow (vph)	733	15	0	0	2	0	0	1546	470	0	1329	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)	64.4	64.4			64.4			76.8	76.8		76.8	
Effective Green, g (s)	64.4	64.4			64.4			76.8	76.8		76.8	
Actuated g/C Ratio	0.43	0.43			0.43			0.51	0.51		0.51	
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)	605	680			800			1730	810		941	
v/s Ratio Prot		0.01			0.00							
v/s Ratio Perm	c0.52							0.46	0.30		c0.72	
v/c Ratio	1.21	0.02			0.00			0.89	0.58		1.70dl	
Uniform Delay, d1	42.8	24.7			24.5			32.9	25.4		36.6	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	110.0	0.0			0.0			6.5	1.3		191.9	
Delay (s)	152.8	24.7			24.5			39.4	26.7		228.5	
Level of Service	F	C			C			D	C		F	
Approach Delay (s)		148.5			24.5			35.8			228.5	
Approach LOS		F			C			D			F	

Intersection Summary

HCM Average Control Delay	116.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

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

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	174	59	86	114	0	0	0	0	181	1365	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						4.9	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1799			1824						5021	
Flt Permitted		1.00			0.75						0.99	
Satd. Flow (perm)		1799			1395						5021	
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)	0	189	64	93	124	0	0	0	0	197	1484	85
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	244	0	0	217	0	0	0	0	0	1756	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		13.1			13.1						23.3	
Effective Green, g (s)		13.1			13.1						23.3	
Actuated g/C Ratio		0.29			0.29						0.51	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		518			402						2571	
v/s Ratio Prot		0.14									c0.35	
v/s Ratio Perm					c0.16							
v/c Ratio		0.47			0.54						0.68	
Uniform Delay, d1		13.3			13.7						8.3	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.9			1.8						1.0	
Delay (s)		14.3			15.4						9.3	
Level of Service		B			B						A	
Approach Delay (s)		14.3			15.4			0.0			9.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	9.1
Intersection Capacity Utilization	66.4%	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	326	160	164	303	0	0	0	0	184	1754	198
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		0.96			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1780			1831						4993	
Flt Permitted		1.00			0.45						1.00	
Satd. Flow (perm)		1780			840						4993	
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)	0	354	174	178	329	0	0	0	0	200	1907	215
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	527	0	0	507	0	0	0	0	0	2311	0
Turn Type				Perm						Split		
Protected Phases		8			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		54.8			54.8						46.1	
Effective Green, g (s)		54.8			54.8						46.1	
Actuated g/C Ratio		0.50			0.50						0.42	
Clearance Time (s)		4.2			4.2						4.9	
Vehicle Extension (s)		4.0			4.0						5.0	
Lane Grp Cap (vph)		887			418						2093	
v/s Ratio Prot		0.30									c0.46	
v/s Ratio Perm					c0.60							
v/c Ratio		0.59			1.21						1.10	
Uniform Delay, d1		19.7			27.6						31.9	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		1.3			116.1						54.7	
Delay (s)		20.9			143.7						86.6	
Level of Service		C			F						F	
Approach Delay (s)		20.9			143.7			0.0			86.6	
Approach LOS		C			F			A			F	

Intersection Summary

HCM Average Control Delay	84.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
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)	73	265	0	0	161	92	45	627	59	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			0.95			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1843			1771			5008				
Flt Permitted		0.87			1.00			1.00				
Satd. Flow (perm)		1624			1771			5008				
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)	79	288	0	0	175	100	49	682	64	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	19	0	0	0	0
Lane Group Flow (vph)	0	367	0	0	230	0	0	776	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		15.3			15.3			19.2				
Effective Green, g (s)		15.3			15.3			19.2				
Actuated g/C Ratio		0.35			0.35			0.44				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		570			621			2205				
v/s Ratio Prot					0.13			c0.15				
v/s Ratio Perm		c0.23										
v/c Ratio		0.64			0.37			0.35				
Uniform Delay, d1		11.9			10.6			8.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		2.8			0.5			0.0				
Delay (s)		14.6			11.1			8.1				
Level of Service		B			B			A				
Approach Delay (s)		14.6			11.1			8.1			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
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)	66	110	0	0	136	151	37	1481	46	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			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1828			1731			5057				
Flt Permitted		0.78			1.00			1.00				
Satd. Flow (perm)		1457			1731			5057				
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)	72	120	0	0	148	164	40	1610	50	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	192	0	0	307	0	0	1694	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		13.4			13.4			20.3				
Effective Green, g (s)		13.4			13.4			20.3				
Actuated g/C Ratio		0.31			0.31			0.47				
Clearance Time (s)		4.2			4.2			4.9				
Vehicle Extension (s)		4.0			4.0			0.2				
Lane Grp Cap (vph)		456			542			2399				
v/s Ratio Prot					c0.18			c0.34				
v/s Ratio Perm		0.13										
v/c Ratio		0.42			0.57			0.71				
Uniform Delay, d1		11.6			12.3			8.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.9			1.7			0.8				
Delay (s)		12.5			13.9			9.7				
Level of Service		B			B			A				
Approach Delay (s)		12.5			13.9			9.7			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	0.65		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	9.1
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
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	636	131	0	0	0	0	0	0	886	834	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		0.97									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3449									3450	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3449									3450	
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)	0	691	142	0	0	0	0	0	0	963	907	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	38	0
Lane Group Flow (vph)	0	813	0	0	0	0	0	0	0	0	1832	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		30.9									49.0	
Effective Green, g (s)		30.9									49.0	
Actuated g/C Ratio		0.35									0.55	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		1202									1906	
v/s Ratio Prot		c0.24										
v/s Ratio Perm											0.53	
v/c Ratio		0.68									0.96	
Uniform Delay, d1		24.6									18.9	
Progression Factor		1.00									1.00	
Incremental Delay, d2		2.5									13.0	
Delay (s)		27.1									32.0	
Level of Service		C									C	
Approach Delay (s)		27.1			0.0			0.0			32.0	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	8.8
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
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	563	213	0	0	0	0	0	0	857	584	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		0.96									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3393									3437	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3393									3437	
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)	0	612	232	0	0	0	0	0	0	932	635	0
RTOR Reduction (vph)	0	55	0	0	0	0	0	0	0	0	87	0
Lane Group Flow (vph)	0	789	0	0	0	0	0	0	0	0	1480	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		28.8									34.3	
Effective Green, g (s)		28.8									34.3	
Actuated g/C Ratio		0.40									0.48	
Clearance Time (s)		4.2									4.6	
Vehicle Extension (s)		6.4									5.6	
Lane Grp Cap (vph)		1359									1640	
v/s Ratio Prot		c0.23										
v/s Ratio Perm											0.43	
v/c Ratio		0.58									1.00dl	
Uniform Delay, d1		16.8									17.3	
Progression Factor		1.00									1.00	
Incremental Delay, d2		1.3									8.0	
Delay (s)		18.1									25.2	
Level of Service		B									C	
Approach Delay (s)		18.1			0.0			0.0			25.2	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	8.8
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

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

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)	370	1155	0	0	272	311	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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	1255	0	0	296	338	0	0	0	0	0
RTOR Reduction (vph)	41	0	0	0	0	87	0	0	0	0	0
Lane Group Flow (vph)	361	1255	0	0	296	251	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	71.4	71.4			18.4	18.4					
Effective Green, g (s)	71.4	71.4			18.4	18.4					
Actuated g/C Ratio	0.72	0.72			0.19	0.19					
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)	1277	1277			658	294					
v/s Ratio Prot	0.20	c0.71			0.08						
v/s Ratio Perm						c0.16					
v/c Ratio	0.28	0.98			0.45	0.85					
Uniform Delay, d1	4.8	13.2			35.8	39.0					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.3	21.1			0.8	21.9					
Delay (s)	5.1	34.4			36.7	60.9					
Level of Service	A	C			D	E					
Approach Delay (s)		27.3			49.6			0.0		0.0	
Approach LOS		C			D			A		A	

Intersection Summary

HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
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)	321	1101	0	0	473	780	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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	349	1197	0	0	514	848	0	0	0	0	0
RTOR Reduction (vph)	77	0	0	0	0	33	0	0	0	0	0
Lane Group Flow (vph)	272	1197	0	0	514	815	0	0	0	0	0
Turn Type	Split					Perm					
Protected Phases	4	4			2						
Permitted Phases						2					
Actuated Green, G (s)	80.4	80.4			60.4	60.4					
Effective Green, g (s)	80.4	80.4			60.4	60.4					
Actuated g/C Ratio	0.54	0.54			0.40	0.40					
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)	949	949			1425	637					
v/s Ratio Prot	0.15	c0.68			0.15						
v/s Ratio Perm						c0.51					
v/c Ratio	0.29	1.26			0.36	1.28					
Uniform Delay, d1	19.1	34.8			31.3	44.8					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.4	126.1			0.3	137.7					
Delay (s)	19.4	160.9			31.6	182.5					
Level of Service	B	F			C	F					
Approach Delay (s)		129.0			125.5			0.0		0.0	
Approach LOS		F			F			A		A	

Intersection Summary

HCM Average Control Delay	127.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	81.7%	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	1013	563	6	37	0	0	0	0	0	953	167
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		0.99						1.00	
Satd. Flow (prot)		1863	1583		1849						3460	
Flt Permitted		1.00	1.00		0.67						1.00	
Satd. Flow (perm)		1863	1583		1250						3460	
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)	0	1101	612	7	40	0	0	0	0	0	1036	182
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1101	604	0	47	0	0	0	0	0	1204	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		57.3	57.3		57.3						34.9	
Effective Green, g (s)		57.3	57.3		57.3						34.9	
Actuated g/C Ratio		0.57	0.57		0.57						0.35	
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)		1067	907		716						1208	
v/s Ratio Prot		c0.59									c0.35	
v/s Ratio Perm			0.38		0.04							
v/c Ratio		1.03	0.67		0.07						1.00	
Uniform Delay, d1		21.4	14.7		9.5						32.5	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		36.1	2.5		0.1						24.9	
Delay (s)		57.4	17.2		9.5						57.4	
Level of Service		E	B		A						E	
Approach Delay (s)		43.0			9.5			0.0			57.4	
Approach LOS		D			A			A			E	

Intersection Summary

HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
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	1303	479	7	65	0	0	0	0	0	955	328
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						0.96	
Flt Protected		1.00	1.00		0.99						1.00	
Satd. Flow (prot)		1863	1583		1853						3403	
Flt Permitted		1.00	1.00		0.64						1.00	
Satd. Flow (perm)		1863	1583		1183						3403	
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)	0	1416	521	8	71	0	0	0	0	0	1038	357
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	29	0
Lane Group Flow (vph)	0	1416	513	0	79	0	0	0	0	0	1366	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		70.3	70.3		70.3						41.9	
Effective Green, g (s)		70.3	70.3		70.3						41.9	
Actuated g/C Ratio		0.59	0.59		0.59						0.35	
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)		1091	927		693						1188	
v/s Ratio Prot		c0.76									c0.40	
v/s Ratio Perm			0.32		0.07							
v/c Ratio		1.30	0.55		0.11						1.15	
Uniform Delay, d1		24.9	15.2		11.0						39.0	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		140.9	1.2		0.1						77.7	
Delay (s)		165.7	16.5		11.2						116.7	
Level of Service		F	B		B						F	
Approach Delay (s)		125.6			11.2			0.0			116.7	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	119.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
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)	1040	0	42	610	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			1.00		
Satd. Flow (prot)	1770			3528		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			3528		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1130	0	46	663	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1130	0	0	709	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	57.4			22.8		
Effective Green, g (s)	57.4			22.8		
Actuated g/C Ratio	0.64			0.26		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	1136			900		
v/s Ratio Prot	c0.64			c0.20		
v/s Ratio Perm						
v/c Ratio	0.99			0.79		
Uniform Delay, d1	15.8			31.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	25.3			5.3		
Delay (s)	41.1			36.4		
Level of Service	D			D		
Approach Delay (s)	41.1			36.4	0.0	
Approach LOS	D			D	A	

Intersection Summary

HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	9.2
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
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)	1305	0	73	719	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			1.00		
Satd. Flow (prot)	1770			3523		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			3523		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1418	0	79	782	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1418	0	0	861	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	98.4			32.4		
Effective Green, g (s)	98.4			32.4		
Actuated g/C Ratio	0.70			0.23		
Clearance Time (s)	4.6			4.6		
Vehicle Extension (s)	3.3			4.9		
Lane Grp Cap (vph)	1244			815		
v/s Ratio Prot	c0.80			c0.24		
v/s Ratio Perm						
v/c Ratio	1.14			1.06		
Uniform Delay, d1	20.8			53.8		
Progression Factor	1.00			1.00		
Incremental Delay, d2	73.1			47.5		
Delay (s)	93.9			101.3		
Level of Service	F			F		
Approach Delay (s)	93.9			101.3	0.0	
Approach LOS	F			F	A	

Intersection Summary

HCM Average Control Delay	96.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
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	1474	145	111	376	0	0	0	0	376	1377	291
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)		3492		1770	3539						4931	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3492		1770	3539						4931	
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)	0	1602	158	121	409	0	0	0	0	409	1497	316
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	1755	0	121	409	0	0	0	0	0	2207	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		65.8		9.3	78.8						62.1	
Effective Green, g (s)		65.8		9.3	78.8						62.1	
Actuated g/C Ratio		0.44		0.06	0.53						0.41	
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)		1532		110	1859						2041	
v/s Ratio Prot		c0.50		c0.07	0.12						c0.45	
v/s Ratio Perm												
v/c Ratio		1.15		1.10	0.22						1.08	
Uniform Delay, d1		42.1		70.3	19.1						44.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		73.7		115.3	0.2						45.9	
Delay (s)		115.8		185.6	19.3						89.8	
Level of Service		F		F	B						F	
Approach Delay (s)		115.8			57.3			0.0			89.8	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	96.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
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	1673	179	251	1353	0	0	0	0	364	1706	555
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						0.97	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		3488		1770	3539						4890	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3488		1770	3539						4890	
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)	0	1818	195	273	1471	0	0	0	0	396	1854	603
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	2007	0	273	1471	0	0	0	0	0	2840	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		57.8		16.3	77.8						63.1	
Effective Green, g (s)		57.8		16.3	77.8						63.1	
Actuated g/C Ratio		0.39		0.11	0.52						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)		1344		192	1836						2057	
v/s Ratio Prot		c0.58		c0.15	0.42						c0.58	
v/s Ratio Perm												
v/c Ratio		1.49		1.42	0.80						1.38	
Uniform Delay, d1		46.1		66.8	29.7						43.5	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		226.1		217.4	3.2						174.3	
Delay (s)		272.2		284.3	33.0						217.8	
Level of Service		F		F	C						F	
Approach Delay (s)		272.2			72.3			0.0			217.8	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	196.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	129.5%	ICU Level of Service	H
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)	908	934	0	0	459	158	44	699	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		5070	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5070	1583			
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)	987	1015	0	0	499	172	48	760	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	58	0	0	19	0	0	0
Lane Group Flow (vph)	987	1015	0	0	499	114	0	808	8	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	80.6	108.9			24.6	24.6		25.5	25.5			
Effective Green, g (s)	80.6	108.9			24.6	24.6		25.5	25.5			
Actuated g/C Ratio	0.56	0.76			0.17	0.17		0.18	0.18			
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)	994	2686			607	271		901	281			
v/s Ratio Prot	c0.56	0.29			c0.14			c0.16				
v/s Ratio Perm						0.07			0.01			
v/c Ratio	0.99	0.38			0.82	0.42		0.90	0.03			
Uniform Delay, d1	31.2	5.8			57.3	53.1		57.7	48.8			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	26.6	0.2			9.9	2.3		11.2	0.0			
Delay (s)	57.8	6.0			67.2	55.4		68.9	48.8			
Level of Service	E	A			E	E		E	D			
Approach Delay (s)		31.6			64.2			68.3			0.0	
Approach LOS		C			E			E			A	

Intersection Summary

HCM Average Control Delay	46.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	143.5	Sum of lost time (s)	12.8
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
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)	422	1610	0	0	1540	302	62	1584	29	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		5076	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5076	1583			
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)	459	1750	0	0	1674	328	67	1722	32	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	12	0	0	10	0	0	0
Lane Group Flow (vph)	459	1750	0	0	1674	316	0	1789	22	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	28.3	86.8			54.8	54.8		44.1	44.1			
Effective Green, g (s)	28.3	86.8			54.8	54.8		44.1	44.1			
Actuated g/C Ratio	0.20	0.62			0.39	0.39		0.32	0.32			
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)	358	2194			1385	620		1599	499			
v/s Ratio Prot	c0.26	0.49			c0.47			c0.35				
v/s Ratio Perm						0.20			0.01			
v/c Ratio	1.28	0.80			1.21	0.51		1.12	0.04			
Uniform Delay, d1	55.9	20.0			42.6	32.4		48.0	33.3			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	146.7	2.4			100.9	1.4		62.5	0.0			
Delay (s)	202.6	22.4			143.5	33.8		110.5	33.3			
Level of Service	F	C			F	C		F	C			
Approach Delay (s)		59.9			125.5			109.1			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	96.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	129.5%	ICU Level of Service	H
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)	55	688	144	404	510	38	70	183	98	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	0.97		1.00	0.99		1.00	0.95		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	3447		1770	3503		1770	3354		1770	3463	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3447		1770	3503		1770	3354		1770	3463	
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)	60	748	157	439	554	41	76	199	107	74	384	64
RTOR Reduction (vph)	0	11	0	0	3	0	0	56	0	0	10	0
Lane Group Flow (vph)	60	894	0	439	592	0	76	250	0	74	438	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	9.3	37.7		36.2	64.6		9.3	16.9		9.3	26.9	
Effective Green, g (s)	9.3	37.7		36.2	64.6		9.3	16.9		9.3	26.9	
Actuated g/C Ratio	0.07	0.30		0.28	0.51		0.07	0.13		0.07	0.21	
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)	129	1021		503	1778		129	445		129	732	
v/s Ratio Prot	0.03	c0.26		c0.25	0.17		c0.04	0.07		0.04	c0.13	
v/s Ratio Perm												
v/c Ratio	0.47	0.88		0.87	0.33		0.59	0.56		0.57	0.60	
Uniform Delay, d1	56.6	42.6		43.4	18.6		57.1	51.7		57.1	45.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	9.2		14.9	0.2		4.4	2.7		3.8	2.0	
Delay (s)	57.6	51.8		58.3	18.8		61.5	54.4		60.9	47.3	
Level of Service	E	D		E	B		E	D		E	D	
Approach Delay (s)		52.1			35.6			55.8			49.2	
Approach LOS		D			D			E			D	

Intersection Summary

HCM Average Control Delay	46.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	127.3	Sum of lost time (s)	17.2
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
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)	121	1327	109	178	1298	145	172	647	203	452	709	391
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	0.99		1.00	0.98		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	3499		1770	3486		1770	3412		1770	3351	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3499		1770	3486		1770	3412		1770	3351	
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)	132	1442	118	193	1411	158	187	703	221	491	771	425
RTOR Reduction (vph)	0	4	0	0	6	0	0	21	0	0	52	0
Lane Group Flow (vph)	132	1556	0	193	1563	0	187	903	0	491	1144	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	12.0	43.4		13.0	44.4		15.0	36.4		25.0	56.4	
Effective Green, g (s)	12.0	43.4		13.0	44.4		15.0	36.4		25.0	56.4	
Actuated g/C Ratio	0.08	0.30		0.09	0.31		0.10	0.25		0.17	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)	146	1047		159	1067		183	857		305	1303	
v/s Ratio Prot	0.07	0.44		c0.11	c0.45		0.11	0.26		c0.28	c0.34	
v/s Ratio Perm												
v/c Ratio	0.90	1.49		1.21	1.47		1.02	1.05		1.61	0.88	
Uniform Delay, d1	65.9	50.8		66.0	50.3		65.0	54.3		60.0	41.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	46.1	223.8		140.3	214.6		72.4	45.9		289.2	7.6	
Delay (s)	112.0	274.6		206.3	264.9		137.4	100.2		349.2	48.7	
Level of Service	F	F		F	F		F	F		F	D	
Approach Delay (s)		261.9			258.4			106.4			136.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	199.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	122.6%	ICU Level of Service	H
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)	133	495	215	154	644	114	284	462	55	101	638	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)	4.0	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	0.98		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	3459		1770	3483		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	3459		1770	3483		1770	3539	1583
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)	145	538	234	167	700	124	309	502	60	110	693	176
RTOR Reduction (vph)	0	0	132	0	15	0	0	9	0	0	0	91
Lane Group Flow (vph)	145	538	102	167	809	0	309	553	0	110	693	85
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)	12.0	25.0	25.0	12.0	25.0		15.0	30.8		9.5	25.3	25.3
Effective Green, g (s)	12.0	25.0	25.0	12.0	25.0		15.0	30.8		9.5	25.3	25.3
Actuated g/C Ratio	0.13	0.26	0.26	0.13	0.26		0.16	0.32		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)	223	930	416	223	909		279	1128		177	942	421
v/s Ratio Prot	0.08	0.15		c0.09	c0.23		c0.17	0.16		0.06	c0.20	
v/s Ratio Perm			0.06									0.05
v/c Ratio	0.65	0.58	0.25	0.75	0.89		1.11	0.49		0.62	0.74	0.20
Uniform Delay, d1	39.6	30.5	27.6	40.1	33.7		40.0	25.8		41.1	31.8	27.1
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	5.1	1.2	0.5	11.4	11.1		85.8	0.7		4.8	3.7	0.5
Delay (s)	44.6	31.7	28.2	51.5	44.9		125.9	26.5		45.9	35.5	27.6
Level of Service	D	C	C	D	D		F	C		D	D	C
Approach Delay (s)		32.8			46.0			61.8			35.2	
Approach LOS		C			D			E			D	

Intersection Summary

HCM Average Control Delay	43.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	95.1	Sum of lost time (s)	17.8
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
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)	300	1336	437	167	1019	167	442	918	98	209	801	264
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	0.98		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	3464		1770	3488		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	3464		1770	3488		1770	3539	1583
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)	326	1452	475	182	1108	182	480	998	107	227	871	287
RTOR Reduction (vph)	0	0	63	0	9	0	0	5	0	0	0	75
Lane Group Flow (vph)	326	1452	412	182	1281	0	480	1100	0	227	871	212
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)	22.0	55.1	55.1	12.0	45.1		31.0	47.1		18.0	34.1	34.1
Effective Green, g (s)	22.0	55.1	55.1	12.0	45.1		31.0	47.1		18.0	34.1	34.1
Actuated g/C Ratio	0.15	0.37	0.37	0.08	0.30		0.21	0.31		0.12	0.23	0.23
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)	260	1300	581	142	1042		366	1095		212	805	360
v/s Ratio Prot	c0.18	0.41		0.10	c0.37		c0.27	0.32		0.13	c0.25	
v/s Ratio Perm			0.26									0.13
v/c Ratio	1.25	1.12	0.71	1.28	1.23		1.31	1.00		1.07	1.08	0.59
Uniform Delay, d1	64.0	47.5	40.6	69.0	52.5		59.5	51.5		66.0	58.0	51.7
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	141.8	63.6	4.5	169.8	111.7		158.5	28.2		81.8	56.2	3.8
Delay (s)	205.8	111.0	45.1	238.8	164.2		218.0	79.6		147.8	114.2	55.5
Level of Service	F	F	D	F	F		F	E		F	F	E
Approach Delay (s)		110.8			173.4			121.5			107.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	126.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
78: CA 180 EB & N Blackstone Ave

4/9/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	168	0	0	0	271	1880
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	0	0	0	295	2043
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	183	0	0	0	0	2338
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	9.8					30.7
Effective Green, g (s)	9.8					30.7
Actuated g/C Ratio	0.20					0.62
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	350					3128
v/s Ratio Prot	c0.10					c0.46
v/s Ratio Perm						
v/c Ratio	0.52					0.75
Uniform Delay, d1	17.8					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	2.5					1.3
Delay (s)	20.3					8.0
Level of Service	C					A
Approach Delay (s)	20.3		0.0			8.0
Approach LOS	C		A			A

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	152.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
78: CA 180 EB & N Blackstone Ave

4/9/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	102	0	0	0	504	2517
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					5043
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5043
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	0	0	0	548	2736
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	111	0	0	0	0	3284
Turn Type					Split	
Protected Phases	8				6	6
Permitted Phases						
Actuated Green, G (s)	10.0					60.5
Effective Green, g (s)	10.0					60.5
Actuated g/C Ratio	0.13					0.76
Clearance Time (s)	4.2					4.9
Vehicle Extension (s)	4.8					5.4
Lane Grp Cap (vph)	222					3833
v/s Ratio Prot	c0.06					c0.65
v/s Ratio Perm						
v/c Ratio	0.50					0.86
Uniform Delay, d1	32.5					6.6
Progression Factor	1.00					1.00
Incremental Delay, d2	3.4					2.3
Delay (s)	35.9					8.9
Level of Service	D					A
Approach Delay (s)	35.9		0.0			8.9
Approach LOS	D		A			A

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	178.8%	ICU Level of Service	H
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	272	0	0	169	489	2	633	1116	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	0.48	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	890	1863			1863	1583		5085	1583			
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)	8	296	0	0	184	532	2	688	1213	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	242	0	0	54	0	0	0
Lane Group Flow (vph)	8	296	0	0	184	290	0	690	1159	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	25.4	25.4			25.4	25.4		84.7	84.7			
Effective Green, g (s)	25.4	25.4			25.4	25.4		84.7	84.7			
Actuated g/C Ratio	0.21	0.21			0.21	0.21		0.71	0.71			
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)	190	397			397	337		3613	1125			
v/s Ratio Prot		0.16			0.10			0.14				
v/s Ratio Perm	0.01					c0.18			c0.73			
v/c Ratio	0.04	0.75			0.46	0.86		0.19	1.03			
Uniform Delay, d1	37.2	43.9			41.0	45.2		5.8	17.2			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.2	9.6			2.2	21.2		0.1	35.0			
Delay (s)	37.5	53.5			43.2	66.4		5.8	52.2			
Level of Service	D	D			D	E		A	D			
Approach Delay (s)		53.0			60.4			35.4			0.0	
Approach LOS		D			E			D			A	

Intersection Summary

HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	9.1
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
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)	23	480	0	0	102	581	0	1180	1168	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	0.66	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1225	1863			1863	1583		5085	1583			
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)	25	522	0	0	111	632	0	1283	1270	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	47	0	0	46	0	0	0
Lane Group Flow (vph)	25	522	0	0	111	585	0	1283	1224	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	40.8	40.8			40.8	40.8		80.1	80.1			
Effective Green, g (s)	40.8	40.8			40.8	40.8		80.1	80.1			
Actuated g/C Ratio	0.31	0.31			0.31	0.31		0.62	0.62			
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)	384	585			585	497		3133	975			
v/s Ratio Prot		0.28			0.06			0.25				
v/s Ratio Perm	0.02					c0.37			c0.77			
v/c Ratio	0.07	0.89			0.19	1.18		0.41	1.25			
Uniform Delay, d1	31.2	42.5			32.5	44.6		12.8	25.0			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.2	17.2			0.4	99.3		0.2	123.2			
Delay (s)	31.4	59.7			33.0	143.9		13.0	148.1			
Level of Service	C	E			C	F		B	F			
Approach Delay (s)		58.4			127.3			80.2			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	86.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	165.0%	ICU Level of Service	H
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	415	1195	5	146	0	0	0	0	3	928	324
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		0.90		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1676		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1676		1770	1863						3539	1583
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)	0	451	1299	5	159	0	0	0	0	3	1009	352
RTOR Reduction (vph)	0	62	0	0	0	0	0	0	0	0	0	170
Lane Group Flow (vph)	0	1688	0	5	159	0	0	0	0	0	1012	182
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		90.0		2.2	95.9						35.5	35.5
Effective Green, g (s)		90.0		2.2	95.9						35.5	35.5
Actuated g/C Ratio		0.64		0.02	0.68						0.25	0.25
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)		1074		28	1272						894	400
v/s Ratio Prot		c1.01		0.00	c0.09						c0.29	
v/s Ratio Perm												0.11
v/c Ratio		1.57		0.18	0.12						1.13	0.45
Uniform Delay, d1		25.2		68.3	7.7						52.5	44.3
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		261.9		1.1	0.1						73.4	1.8
Delay (s)		287.1		69.4	7.8						125.9	46.1
Level of Service		F		E	A						F	D
Approach Delay (s)		287.1			9.7			0.0			105.3	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	197.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	140.5	Sum of lost time (s)	13.3
Intersection Capacity Utilization	128.7%	ICU Level of Service	H
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	594	1161	20	303	0	0	0	0	5	1816	674
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)		1696		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1696		1770	1863						3539	1583
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)	0	646	1262	22	329	0	0	0	0	5	1974	733
RTOR Reduction (vph)	0	45	0	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	1863	0	22	329	0	0	0	0	0	1979	550
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		76.0		6.9	86.6						49.5	49.5
Effective Green, g (s)		76.0		6.9	86.6						49.5	49.5
Actuated g/C Ratio		0.52		0.05	0.60						0.34	0.34
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)		888		84	1111						1206	540
v/s Ratio Prot		c1.10		0.01	c0.18						c0.56	
v/s Ratio Perm												0.35
v/c Ratio		2.10		0.26	0.30						1.64	1.02
Uniform Delay, d1		34.6		66.7	14.4						47.8	47.8
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		497.8		0.6	0.3						292.2	43.7
Delay (s)		532.4		67.3	14.6						340.1	91.5
Level of Service		F		E	B						F	F
Approach Delay (s)		532.4			17.9			0.0			272.9	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	354.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.84		
Actuated Cycle Length (s)	145.2	Sum of lost time (s)	13.3
Intersection Capacity Utilization	160.5%	ICU Level of Service	H
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	562	17	57	49	32	1	37	29	17	24	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	8	611	18	62	53	35	1	40	32	18	26	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)		1300										
pX, platoon unblocked												
vC, conflicting volume	88			629			846	847	315	567	839	71
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88			629			846	847	315	567	839	71
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			93			100	85	95	94	91	100
cM capacity (veh/h)	1506			949			224	276	681	326	279	977

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	313	324	150	73	48
Volume Left	8	0	62	1	18
Volume Right	0	18	35	32	3
cSH	1506	1700	949	370	312
Volume to Capacity	0.01	0.19	0.07	0.20	0.15
Queue Length 95th (ft)	0	0	5	18	13
Control Delay (s)	0.2	0.0	4.1	17.1	18.6
Lane LOS	A		A	C	C
Approach Delay (s)	0.1		4.1	17.1	18.6
Approach LOS				C	C

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	43.0%	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)	193	65	156	237	271	0	5	1624	1	276	1961	99
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	210	71	170	258	295	0	5	1765	1	300	2132	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)		1300										
pX, platoon unblocked												
vC, conflicting volume	295			240			2558	1385	120	2148	1470	295
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	295			240			2558	1385	120	2148	1470	295
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 %	83			81			0	0	100	0	0	85
cM capacity (veh/h)	1264			1324			0	96	909	0	85	702

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	245	205	552	1772	2539
Volume Left	210	0	258	5	300
Volume Right	0	170	0	1	108
cSH	1264	1700	1324	0	0
Volume to Capacity	0.17	0.12	0.19	Err	Err
Queue Length 95th (ft)	15	0	18	Err	Err
Control Delay (s)	7.4	0.0	5.0	Err	Err
Lane LOS	A		A	F	F
Approach Delay (s)	4.0		5.0	Err	Err
Approach LOS				F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	263.4%	ICU Level of Service	H
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)	26	540	45	20	117	35	0	59	32	55	71	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	28	587	49	22	127	38	0	64	35	60	77	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)					1008							
pX, platoon unblocked												
vC, conflicting volume	165			636			914	877	318	607	882	146
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	165			636			914	877	318	607	882	146
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			98			100	77	95	79	72	98
cM capacity (veh/h)	1410			943			169	273	678	287	271	874

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	322	342	187	99	154
Volume Left	28	0	22	0	60
Volume Right	0	49	38	35	17
cSH	1410	1700	943	346	301
Volume to Capacity	0.02	0.20	0.02	0.29	0.51
Queue Length 95th (ft)	2	0	2	29	69
Control Delay (s)	0.8	0.0	1.2	19.5	28.9
Lane LOS	A		A	C	D
Approach Delay (s)	0.4		1.2	19.5	28.9
Approach LOS				C	D

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	46.7%	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)	56	435	27	35	700	26	5	96	10	67	42	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	61	473	29	38	761	28	5	104	11	73	46	39
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	0.81						0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	789			502			1522	1474	251	1272	1475	775
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	618			502			1528	1468	251	1218	1469	601
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			83	0	99	0	50	89
cM capacity (veh/h)	772			1058			32	91	749	0	90	358

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	297	266	827	121	158
Volume Left	61	0	38	5	73
Volume Right	0	29	28	11	39
cSH	772	1700	1058	90	0
Volume to Capacity	0.08	0.16	0.04	1.34	Err
Queue Length 95th (ft)	6	0	3	222	Err
Control Delay (s)	2.8	0.0	0.9	292.8	Err
Lane LOS	A		A	F	F
Approach Delay (s)	1.5		0.9	292.8	Err
Approach LOS				F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

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)	11	46	36	89	12	1	77	1039	59	28	592	6
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	1.00	
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	3862		1947	3887	
Flt Permitted	0.75	1.00	1.00	0.72	1.00	1.00	0.40	1.00		0.26	1.00	
Satd. Flow (perm)	1535	2049	1742	1484	2049	1742	830	3862		543	3887	
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)	12	50	39	97	13	1	84	1129	64	30	643	7
RTOR Reduction (vph)	0	0	30	0	0	1	0	9	0	0	2	0
Lane Group Flow (vph)	12	50	9	97	13	0	84	1184	0	30	648	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)	7.4	7.4	7.4	7.4	7.4	7.4	15.1	15.1		15.1	15.1	
Effective Green, g (s)	7.4	7.4	7.4	7.4	7.4	7.4	15.1	15.1		15.1	15.1	
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)	372	497	423	360	497	423	411	1912		269	1924	
v/s Ratio Prot		0.02			0.01			c0.31			0.17	
v/s Ratio Perm	0.01		0.01	c0.07		0.00	0.10			0.06		
v/c Ratio	0.03	0.10	0.02	0.27	0.03	0.00	0.20	0.62		0.11	0.34	
Uniform Delay, d1	8.8	9.0	8.8	9.4	8.8	8.7	4.3	5.6		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	0.0	0.1	0.0	0.4	0.0	0.0	0.2	0.6		0.2	0.1	
Delay (s)	8.9	9.1	8.8	9.8	8.8	8.7	4.6	6.2		4.3	4.8	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		8.9			9.6			6.1			4.8	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
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 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)	79	99	91	119	468	18	440	679	32	50	1370	136
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	0.99	
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)	1947	2049	1742	1947	2049	1742	1947	3867		1947	3840	
Flt Permitted	0.29	1.00	1.00	0.69	1.00	1.00	0.25	1.00		0.31	1.00	
Satd. Flow (perm)	594	2049	1742	1408	2049	1742	509	3867		627	3840	
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)	86	108	99	129	509	20	478	738	35	54	1489	148
RTOR Reduction (vph)	0	0	4	0	0	13	0	8	0	0	18	0
Lane Group Flow (vph)	86	108	95	129	509	7	478	765	0	54	1619	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)	13.8	13.8	13.8	13.8	13.8	13.8	16.1	16.1		16.1	16.1	
Effective Green, g (s)	13.8	13.8	13.8	13.8	13.8	13.8	16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.42	0.42		0.42	0.42	
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)	216	746	634	513	746	634	216	1643		266	1631	
v/s Ratio Prot		0.05			c0.25			0.20			0.42	
v/s Ratio Perm	0.14		0.05	0.09		0.00	c0.94			0.09		
v/c Ratio	0.40	0.14	0.15	0.25	0.68	0.01	2.21	0.47		0.20	0.99	
Uniform Delay, d1	9.0	8.1	8.1	8.4	10.2	7.7	10.9	7.8		6.9	10.8	
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	1.2	0.1	0.1	0.3	2.6	0.0	560.6	0.2		0.4	20.5	
Delay (s)	10.2	8.2	8.2	8.7	12.8	7.7	571.5	8.0		7.2	31.3	
Level of Service	B	A	A	A	B	A	F	A		A	C	
Approach Delay (s)		8.8			11.8			223.3			30.5	
Approach LOS		A			B			F			C	

Intersection Summary

HCM Average Control Delay	87.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
84: G St & Mono Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	16	124	5	2	127	12	2	9	9	12	3	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	17	135	5	2	138	13	2	10	10	13	3	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)		1009			513							
pX, platoon unblocked												
vC, conflicting volume	151			140			333	328	138	336	324	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			140			333	328	138	336	324	145
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			100	98	99	98	99	99
cM capacity (veh/h)	1430			1443			605	583	911	597	586	903

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	158	153	22	26
Volume Left	17	2	2	13
Volume Right	5	13	10	10
cSH	1430	1443	699	682
Volume to Capacity	0.01	0.00	0.03	0.04
Queue Length 95th (ft)	1	0	2	3
Control Delay (s)	0.9	0.1	10.3	10.5
Lane LOS	A	A	B	B
Approach Delay (s)	0.9	0.1	10.3	10.5
Approach LOS			B	B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
84: G St & Mono Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	39	323	0	7	510	18	22	31	38	36	46	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	42	351	0	8	554	20	24	34	41	39	50	39
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	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	574			351			1079	1025	351	1073	1015	564
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497			351			1044	985	351	1038	975	486
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			83	85	94	75	77	93
cM capacity (veh/h)	985			1208			141	218	692	154	221	536

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	393	582	99	128
Volume Left	42	8	24	39
Volume Right	0	20	41	39
cSH	985	1208	258	232
Volume to Capacity	0.04	0.01	0.38	0.55
Queue Length 95th (ft)	3	0	43	75
Control Delay (s)	1.4	0.2	27.4	38.2
Lane LOS	A	A	D	E
Approach Delay (s)	1.4	0.2	27.4	38.2
Approach LOS			D	E

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
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)	29	103	9	10	300	30	7	5	8	8	8	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	32	112	10	11	326	33	8	5	9	9	9	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)		492										
pX, platoon unblocked												
vC, conflicting volume	359			122			579	560	117	555	549	342
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	359			122			579	560	117	555	549	342
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			99			98	99	99	98	98	96
cM capacity (veh/h)	1200			1466			391	422	935	423	429	700

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	153	370	22	48
Volume Left	32	11	8	9
Volume Right	10	33	9	30
cSH	1200	1466	522	567
Volume to Capacity	0.03	0.01	0.04	0.08
Queue Length 95th (ft)	2	1	3	7
Control Delay (s)	1.8	0.3	12.2	11.9
Lane LOS	A	A	B	B
Approach Delay (s)	1.8	0.3	12.2	11.9
Approach LOS			B	B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	30.6%	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)	71	265	8	2	165	35	4	9	7	10	14	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	77	288	9	2	179	38	4	10	8	11	15	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)		491										
pX, platoon unblocked												
vC, conflicting volume	217			297			668	668	292	662	654	198
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			297			668	668	292	662	654	198
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 %	94			100			99	97	99	97	96	99
cM capacity (veh/h)	1352			1265			339	357	747	347	364	843

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	374	220	22	37
Volume Left	77	2	4	11
Volume Right	9	38	8	11
cSH	1352	1265	431	430
Volume to Capacity	0.06	0.00	0.05	0.09
Queue Length 95th (ft)	5	0	4	7
Control Delay (s)	2.0	0.1	13.8	14.2
Lane LOS	A	A	B	B
Approach Delay (s)	2.0	0.1	13.8	14.2
Approach LOS			B	B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	42.6%	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)	69	22	34	21	13	4	81	1058	11	7	762	247
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	75	24	37	23	14	4	88	1150	12	8	828	268
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								692			479	
pX, platoon unblocked	0.89	0.89	0.81	0.89	0.89	0.84	0.81			0.84		
vC, conflicting volume	1740	2316	548	1810	2444	581	1097			1162		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	1407	0	838	1551	110	645			804		
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 %	64	78	96	86	84	99	88			99		
cM capacity (veh/h)	207	107	876	166	88	772	757			683		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	136	41	88	767	395	8	552	545
Volume Left	75	23	88	0	0	8	0	0
Volume Right	37	4	0	0	12	0	0	268
cSH	217	135	757	1700	1700	683	1700	1700
Volume to Capacity	0.63	0.30	0.12	0.45	0.23	0.01	0.32	0.32
Queue Length 95th (ft)	92	30	10	0	0	1	0	0
Control Delay (s)	46.0	42.8	10.4	0.0	0.0	10.3	0.0	0.0
Lane LOS	E	E	B			B		
Approach Delay (s)	46.0	42.8	0.7			0.1		
Approach LOS	E	E						

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	52.1%	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)	153	10	141	17	10	14	93	1119	18	2	1238	99
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	166	11	153	18	11	15	101	1216	20	2	1346	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)		998										
pX, platoon unblocked												
vC, conflicting volume	26			164			1256	483	88	1103	552	18
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	26			164			1256	483	88	1103	552	18
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 %	90			99			0	0	98	0	0	90
cM capacity (veh/h)	1588			1414			0	427	971	0	390	1060

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	330	45	101	811	425	2	897	556
Volume Left	166	18	101	0	0	2	0	0
Volume Right	153	15	0	0	20	0	0	108
cSH	1588	1414	0	427	438	0	390	444
Volume to Capacity	0.10	0.01	Err	1.90	0.97	Err	2.30	1.25
Queue Length 95th (ft)	9	1	Err	1341	296	Err	1707	576
Control Delay (s)	4.2	3.2	Err	435.2	66.7	Err	614.9	157.7
Lane LOS	A	A	F	F	F	F	F	F
Approach Delay (s)	4.2	3.2	Err			Err		
Approach LOS			F			F		

Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization		76.8%	ICU Level of Service	D
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
87: O St & Sant 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	54	30	0	377	0	0	0	0	225	102	608
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	0.92
Hourly flow rate (vph)	0	59	33	0	410	0	0	0	0	245	111	661

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	91	410	0	355	661
Volume Left (vph)	0	0	0	245	0
Volume Right (vph)	33	0	0	0	661
Hadj (s)	-0.18	0.03	0.00	0.17	-0.57
Departure Headway (s)	5.4	5.1	5.9	5.4	3.2
Degree Utilization, x	0.14	0.58	0.00	0.53	0.59
Capacity (veh/h)	609	671	534	632	1118
Control Delay (s)	9.2	15.0	8.9	14.4	10.6
Approach Delay (s)	9.2	15.0	0.0	12.0	
Approach LOS	A	C	A	B	

Intersection Summary			
Delay	12.6		
HCM Level of Service	B		
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

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

4/9/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	532	0	0	339	81	0	0	11	316	27	135
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	0.92
Hourly flow rate (vph)	0	578	0	0	368	88	0	0	12	343	29	147

Direction, Lane #	NB 1	SB 1	NE 1	SW 1	SW 2
Volume Total (vph)	578	457	12	373	147
Volume Left (vph)	0	0	0	343	0
Volume Right (vph)	0	88	12	0	147
Hadj (s)	0.03	-0.08	-0.57	0.22	-0.57
Departure Headway (s)	6.4	6.4	7.9	7.0	3.2
Degree Utilization, x	1.02	0.81	0.03	0.73	0.13
Capacity (veh/h)	568	557	396	373	1121
Control Delay (s)	69.3	31.0	11.1	26.7	6.7
Approach Delay (s)	69.3	31.0	11.1	21.0	
Approach LOS	F	D	B	C	

Intersection Summary			
Delay	41.7		
HCM Level of Service	E		
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
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)	196	211	0	0	0	171	0	108	11	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	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)	213	229	0	0	0	186	0	117	12	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			229			748	655	115	611	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			229			748	655	115	611	655	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 %	87			100			100	65	99	100	100	100
cM capacity (veh/h)	1622			1336			271	333	916	245	333	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	213	115	115	186	78	51
Volume Left	213	0	0	0	0	0
Volume Right	0	0	0	186	0	12
cSH	1622	1700	1700	1700	333	392
Volume to Capacity	0.13	0.07	0.07	0.11	0.23	0.13
Queue Length 95th (ft)	11	0	0	0	22	11
Control Delay (s)	7.6	0.0	0.0	0.0	19.1	15.6
Lane LOS	A				C	C
Approach Delay (s)	3.6			0.0	17.7	
Approach LOS					C	

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	34.8%	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)	853	497	0	0	0	251	0	170	117	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	927	540	0	0	0	273	0	185	127	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			540			2531	2395	270	2344	2395	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			540			2531	2395	270	2344	2395	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 %	43			100			100	0	83	0	100	100
cM capacity (veh/h)	1622			1024			8	14	728	0	14	1084

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NE 1	NE 2
Volume Total	927	270	270	273	123	189
Volume Left	927	0	0	0	0	0
Volume Right	0	0	0	273	0	127
cSH	1622	1700	1700	1700	14	42
Volume to Capacity	0.57	0.16	0.16	0.16	8.67	4.51
Queue Length 95th (ft)	96	0	0	0	Err	Err
Control Delay (s)	10.1	0.0	0.0	0.0	Err	Err
Lane LOS	B				F	F
Approach Delay (s)	6.4			0.0	Err	
Approach LOS					F	

Intersection Summary			
Average Delay	1524.6		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
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)	141	242	10	5	62	35	6	4	18	36	18	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	153	263	11	5	67	38	7	4	20	39	20	33
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	105			274			715	691	137	557	678	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	105			274			715	691	137	557	678	86
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 %	90			100			98	99	98	89	94	97
cM capacity (veh/h)	1484			1286			270	327	886	367	333	955

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	285	142	111	30	91
Volume Left	153	0	5	7	39
Volume Right	0	11	38	20	33
cSH	1484	1700	1286	511	458
Volume to Capacity	0.10	0.08	0.00	0.06	0.20
Queue Length 95th (ft)	9	0	0	5	18
Control Delay (s)	4.5	0.0	0.4	12.5	14.8
Lane LOS	A		A	B	B
Approach Delay (s)	3.0		0.4	12.5	14.8
Approach LOS				B	B

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	30.0%	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)	34	357	0	7	280	35	4	3	5	16	31	73
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	37	388	0	8	304	38	4	3	5	17	34	79
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		477										
pX, platoon unblocked												
vC, conflicting volume	342			388			897	820	194	614	801	323
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342			388			897	820	194	614	801	323
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 %	97			99			98	99	99	95	89	88
cM capacity (veh/h)	1213			1167			184	297	815	360	305	672

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	231	194	350	13	130
Volume Left	37	0	8	4	17
Volume Right	0	0	38	5	79
cSH	1213	1700	1167	316	471
Volume to Capacity	0.03	0.11	0.01	0.04	0.28
Queue Length 95th (ft)	2	0	0	3	28
Control Delay (s)	1.5	0.0	0.2	16.9	15.5
Lane LOS	A		A	C	C
Approach Delay (s)	0.8		0.2	16.9	15.5
Approach LOS				C	C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	39.9%	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)	3	2	4	6	0	23	5	96	8	79	171	42
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	0.92
Hourly flow rate (vph)	3	2	4	7	0	25	5	104	9	86	186	46

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	10	7	25	118	317
Volume Left (vph)	3	7	0	5	86
Volume Right (vph)	4	0	25	9	46
Hadj (s)	-0.17	0.23	-0.57	0.00	0.00
Departure Headway (s)	4.7	5.1	3.2	4.2	4.1
Degree Utilization, x	0.01	0.01	0.02	0.14	0.36
Capacity (veh/h)	696	643	1121	827	878
Control Delay (s)	7.7	8.1	6.3	7.9	9.3
Approach Delay (s)	7.7	6.7		7.9	9.3
Approach LOS	A	A		A	A

Intersection Summary			
Delay	8.8		
HCM Level of Service	A		
Intersection Capacity Utilization	32.6%	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)	17	4	2	44	1	77	11	273	35	44	335	14
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	0.92
Hourly flow rate (vph)	18	4	2	48	1	84	12	297	38	48	364	15

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	25	49	84	347	427
Volume Left (vph)	18	48	0	12	48
Volume Right (vph)	2	0	84	38	15
Hadj (s)	0.13	0.23	-0.57	-0.02	0.04
Departure Headway (s)	5.9	5.9	3.2	4.6	4.6
Degree Utilization, x	0.04	0.08	0.07	0.44	0.54
Capacity (veh/h)	526	529	1121	764	770
Control Delay (s)	9.1	9.4	6.5	11.1	12.8
Approach Delay (s)	9.1	7.6		11.1	12.8
Approach LOS	A	A		B	B

Intersection Summary			
Delay	11.3		
HCM Level of Service	B		
Intersection Capacity Utilization	52.3%	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)	21	360	70	15	284	25	31	100	16	25	140	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	23	391	76	16	309	27	34	109	17	27	152	33
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	589	416	168	679	424	117	185			126		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	589	416	168	679	424	117	185			126		
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 %	89	22	91	86	38	97	98			98		
cM capacity (veh/h)	201	505	876	117	500	935	1390			1460		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	490	352	160	212
Volume Left	23	16	34	27
Volume Right	76	27	17	33
cSH	502	448	1390	1460
Volume to Capacity	0.98	0.79	0.02	0.02
Queue Length 95th (ft)	321	174	2	1
Control Delay (s)	63.1	36.7	1.8	1.1
Lane LOS	F	E	A	A
Approach Delay (s)	63.1	36.7	1.8	1.1
Approach LOS	F	E		

Intersection Summary			
Average Delay	36.6		
Intersection Capacity Utilization	50.2%	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)	142	538	60	92	474	43	113	132	171	97	222	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	154	585	65	100	515	47	123	143	186	105	241	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	1271	1060	274	1324	999	236	307			329		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1271	1060	274	1324	999	236	307			329		
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 %	0	0	91	0	0	94	90			91		
cM capacity (veh/h)	0	185	765	0	201	803	1254			1230		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	804	662	452	412
Volume Left	154	100	123	105
Volume Right	65	47	186	65
cSH	0	0	1254	1230
Volume to Capacity	Err	Err	0.10	0.09
Queue Length 95th (ft)	Err	Err	8	7
Control Delay (s)	Err	Err	2.9	2.7
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	2.9	2.7
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
93: S Railroad Ave & E Lorena Ave

4/10/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	82	1	2	76	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	1	2	83	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			90		177	90
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			90		177	90
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		100	100
cM capacity (veh/h)			1505		812	968

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	90	85	0
Volume Left	0	2	0
Volume Right	1	0	0
cSH	1700	1505	1700
Volume to Capacity	0.05	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.2	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	8.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
93: S Railroad Ave & E Lorena Ave

4/10/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	125	3	5	161	2	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	136	3	5	175	2	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			139		323	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			139		323	138
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		100	100
cM capacity (veh/h)			1444		668	911

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	139	180	2
Volume Left	0	5	2
Volume Right	3	0	0
cSH	1700	1444	668
Volume to Capacity	0.08	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.3	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
94: Van Ness Ave & S Railroad Ave

4/10/2012

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	114	47	33	50	31	87
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	124	51	36	54	34	95
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	207	81	128			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	207	81	128			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	95	98			
cM capacity (veh/h)	762	979	1458			

Direction, Lane #	WB 1	SE 1	NW 1
Volume Total	175	90	128
Volume Left	124	36	0
Volume Right	51	0	95
cSH	815	1458	1700
Volume to Capacity	0.21	0.02	0.08
Queue Length 95th (ft)	20	2	0
Control Delay (s)	10.6	3.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.6	3.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
94: Van Ness Ave & S Railroad Ave

4/10/2012

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	305	75	65	62	75	339
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	332	82	71	67	82	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)						
pX, platoon unblocked						
vC, conflicting volume	474	266	450			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	266	450			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	35	89	94			
cM capacity (veh/h)	514	773	1110			

Direction, Lane #	WB 1	SE 1	NW 1
Volume Total	413	138	450
Volume Left	332	71	0
Volume Right	82	0	368
cSH	550	1110	1700
Volume to Capacity	0.75	0.06	0.26
Queue Length 95th (ft)	163	5	0
Control Delay (s)	28.6	4.6	0.0
Lane LOS	D	A	
Approach Delay (s)	28.6	4.6	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	12.5		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
95: S Railroad Ave & E. Florence Ave

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	27	109	17	0	89	22	9	0	2	11	4	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	29	118	18	0	97	24	10	0	2	12	4	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	121			137			317	307	128	297	304	109
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	121			137			317	307	128	297	304	109
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	100	100	98	99	98
cM capacity (veh/h)	1467			1447			610	595	922	643	597	945

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	166	121	12	36
Volume Left	29	0	10	12
Volume Right	18	24	2	20
cSH	1467	1447	650	770
Volume to Capacity	0.02	0.00	0.02	0.05
Queue Length 95th (ft)	2	0	1	4
Control Delay (s)	1.5	0.0	10.6	9.9
Lane LOS	A		B	A
Approach Delay (s)	1.5	0.0	10.6	9.9
Approach LOS			B	A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
95: S Railroad Ave & E. Florence Ave

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	5	355	16	5	340	9	18	2	0	14	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	5	386	17	5	370	10	20	2	0	15	0	58
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	379			403			848	796	395	792	799	374
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379			403			848	796	395	792	799	374
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			92	99	100	95	100	91
cM capacity (veh/h)	1179			1155			255	317	655	303	315	672

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	409	385	22	73
Volume Left	5	5	20	15
Volume Right	17	10	0	58
cSH	1179	1155	260	536
Volume to Capacity	0.00	0.00	0.08	0.14
Queue Length 95th (ft)	0	0	7	12
Control Delay (s)	0.2	0.2	20.1	12.8
Lane LOS	A	A	C	B
Approach Delay (s)	0.2	0.2	20.1	12.8
Approach LOS			C	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	32.9%	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)	135	543	420	151	445	395	447	1113	156	268	946	77
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	0.98		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)	1947	3893	1742	1947	2049	1742	1947	3821		1947	3849	
Flt Permitted	0.25	1.00	1.00	0.29	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	512	3893	1742	595	2049	1742	1947	3821		1947	3849	
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)	147	590	457	164	484	429	486	1210	170	291	1028	84
RTOR Reduction (vph)	0	0	291	0	0	315	0	18	0	0	10	0
Lane Group Flow (vph)	147	590	166	164	484	114	486	1362	0	291	1102	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)	16.0	16.0	16.0	16.0	16.0	16.0	15.0	22.0		10.0	17.0	
Effective Green, g (s)	16.0	16.0	16.0	16.0	16.0	16.0	15.0	22.0		10.0	17.0	
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.25	0.37		0.17	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)	137	1038	465	159	546	465	487	1401		325	1091	
v/s Ratio Prot		0.15			0.24		c0.25	c0.36		0.15	0.29	
v/s Ratio Perm	c0.29		0.10	0.28		0.07						
v/c Ratio	1.07	0.57	0.36	1.03	0.89	0.25	1.00	0.97		0.90	1.01	
Uniform Delay, d1	22.0	19.0	17.8	22.0	21.1	17.3	22.5	18.7		24.5	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	97.7	0.7	0.5	79.9	15.9	0.3	40.0	17.7		25.4	29.7	
Delay (s)	119.7	19.7	18.3	101.9	37.0	17.5	62.4	36.4		49.9	51.2	
Level of Service	F	B	B	F	D	B	E	D		D	D	
Approach Delay (s)		31.5			39.1			43.1			51.0	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
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)	184	615	366	224	825	550	549	1463	176	494	1097	118
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	0.98		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)	1947	3893	1742	1947	2049	1742	1947	3831		1947	3837	
Flt Permitted	0.15	1.00	1.00	0.30	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	315	3893	1742	606	2049	1742	1947	3831		1947	3837	
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)	200	668	398	243	897	598	597	1590	191	537	1192	128
RTOR Reduction (vph)	0	0	200	0	0	202	0	13	0	0	12	0
Lane Group Flow (vph)	200	668	198	243	897	396	597	1768	0	537	1308	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)	26.0	26.0	26.0	26.0	26.0	26.0	10.0	23.0		9.0	22.0	
Effective Green, g (s)	26.0	26.0	26.0	26.0	26.0	26.0	10.0	23.0		9.0	22.0	
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.37	0.14	0.33		0.13	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)	117	1446	647	225	761	647	278	1259		250	1206	
v/s Ratio Prot		0.17			0.44		c0.31	c0.46		0.28	0.34	
v/s Ratio Perm	c0.63		0.11	0.40		0.23						
v/c Ratio	1.71	0.46	0.31	1.08	1.18	0.61	2.15	1.40		2.15	1.08	
Uniform Delay, d1	22.0	16.7	15.6	22.0	22.0	17.9	30.0	23.5		30.5	24.0	
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	352.8	0.2	0.3	82.9	93.8	1.7	528.2	186.6		529.7	52.2	
Delay (s)	374.8	16.9	15.9	104.9	115.8	19.6	558.2	210.1		560.2	76.2	
Level of Service	F	B	B	F	F	B	F	F		F	E	
Approach Delay (s)		73.1			81.2			297.5			216.1	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	185.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	140.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
97: E Chruch Ave & S Railroad Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	29	1016	43	153	980	14	20	71	30	7	55	127
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	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.95		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)	1947	3869		1947	3885		1947	1957		1947	1835	
Flt Permitted	0.23	1.00		0.21	1.00		0.55	1.00		0.69	1.00	
Satd. Flow (perm)	479	3869		435	3885		1135	1957		1406	1835	
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)	32	1104	47	166	1065	15	22	77	33	8	60	138
RTOR Reduction (vph)	0	4	0	0	1	0	0	27	0	0	78	0
Lane Group Flow (vph)	32	1147	0	166	1079	0	22	83	0	8	120	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	33.6	33.6		33.6	33.6		9.1	9.1		9.1	9.1	
Effective Green, g (s)	33.6	33.6		33.6	33.6		9.1	9.1		9.1	9.1	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.18	0.18		0.18	0.18	
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)	317	2564		288	2575		204	351		252	329	
v/s Ratio Prot		0.30			0.28			0.04			c0.07	
v/s Ratio Perm	0.07			c0.38			0.02			0.01		
v/c Ratio	0.10	0.45		0.58	0.42		0.11	0.24		0.03	0.36	
Uniform Delay, d1	3.1	4.1		4.7	4.0		17.4	17.8		17.2	18.3	
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		2.8	0.1		0.2	0.3		0.1	0.7	
Delay (s)	3.2	4.2		7.4	4.1		17.6	18.2		17.2	19.0	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.2			4.5			18.1			18.9	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
97: E Chruch Ave & S Railroad Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	35	1228	18	272	1428	64	72	256	43	125	254	181
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	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		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)	1947	3885		1947	3868		1947	2005		1947	1921	
Flt Permitted	0.09	1.00		0.15	1.00		0.25	1.00		0.29	1.00	
Satd. Flow (perm)	193	3885		306	3868		512	2005		585	1921	
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)	38	1335	20	296	1552	70	78	278	47	136	276	197
RTOR Reduction (vph)	0	1	0	0	4	0	0	8	0	0	37	0
Lane Group Flow (vph)	38	1354	0	296	1618	0	78	317	0	136	436	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	46.0	46.0		46.0	46.0		16.0	16.0		16.0	16.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.23	0.23		0.23	0.23	
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)	127	2553		201	2542		117	458		134	439	
v/s Ratio Prot		0.35			0.42			0.16			0.23	
v/s Ratio Perm	0.20			c0.97			0.15			c0.23		
v/c Ratio	0.30	0.53		1.47	0.64		0.67	0.69		1.01	0.99	
Uniform Delay, d1	5.1	6.3		12.0	7.1		24.6	24.7		27.0	26.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		237.7	0.5		13.4	4.5		81.8	40.9	
Delay (s)	6.4	6.5		249.7	7.6		38.0	29.2		108.8	67.9	
Level of Service	A	A		F	A		D	C		F	E	
Approach Delay (s)		6.5			45.0			30.9			77.0	
Approach LOS		A			D			C			E	

Intersection Summary

HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
98: E Chruch Ave & S East Ave

4/10/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	350	807	834	17	16	318
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	380	877	907	18	17	346
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		446				
pX, platoon unblocked					0.96	
vC, conflicting volume	925				2115	462
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	925				2079	462
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	48				18	37
cM capacity (veh/h)	734				21	546

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	380	439	439	604	321	363
Volume Left	380	0	0	0	0	17
Volume Right	0	0	0	0	18	346
cSH	734	1700	1700	1700	1700	251
Volume to Capacity	0.52	0.26	0.26	0.36	0.19	1.45
Queue Length 95th (ft)	75	0	0	0	0	516
Control Delay (s)	15.0	0.0	0.0	0.0	0.0	260.0
Lane LOS	C					F
Approach Delay (s)	4.6			0.0		260.0
Approach LOS						F

Intersection Summary			
Average Delay	39.3		
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
98: E Chruch Ave & S East Ave

4/10/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	456	1018	1188	21	16	583
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	496	1107	1291	23	17	634
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		446				
pX, platoon unblocked					0.87	
vC, conflicting volume	1314				2847	657
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1314				2825	657
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	5				0	0
cM capacity (veh/h)	522				1	407

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	496	553	553	861	453	651
Volume Left	496	0	0	0	0	17
Volume Right	0	0	0	0	23	634
cSH	522	1700	1700	1700	1700	22
Volume to Capacity	0.95	0.33	0.33	0.51	0.27	29.50
Queue Length 95th (ft)	302	0	0	0	0	Err
Control Delay (s)	55.9	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	17.3			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	1832.7		
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
99: E Church Ave & S Sunland Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	773	43	21	802	2	33	1	4	0	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	9	840	47	23	872	2	36	1	4	0	0	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)		715										
pX, platoon unblocked												
vC, conflicting volume	874			887			1370	1801	443	1361	1823	437
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	874			887			1370	1801	443	1361	1823	437
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			97			64	99	99	100	100	99
cM capacity (veh/h)	768			759			101	76	562	102	73	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	429	467	459	438	41	8
Volume Left	9	0	23	0	36	0
Volume Right	0	47	0	2	4	8
cSH	768	1700	759	1700	109	567
Volume to Capacity	0.01	0.27	0.03	0.26	0.38	0.01
Queue Length 95th (ft)	1	0	2	0	39	1
Control Delay (s)	0.3	0.0	0.9	0.0	56.8	11.4
Lane LOS	A		A		F	B
Approach Delay (s)	0.2		0.4		56.8	11.4
Approach LOS					F	B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
99: E Church Ave & S Sunland Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	512	16	39	503	0	24	0	43	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	557	17	42	547	0	26	0	47	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)		679										
pX, platoon unblocked												
vC, conflicting volume	547			574			923	1197	287	957	1205	273
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	547			574			923	1197	287	957	1205	273
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			96			88	100	93	100	100	100
cM capacity (veh/h)	1019			995			217	177	710	192	175	724

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	278	296	316	273	73	0
Volume Left	0	0	42	0	26	0
Volume Right	0	17	0	0	47	0
cSH	1019	1700	995	1700	392	1700
Volume to Capacity	0.00	0.17	0.04	0.16	0.19	0.00
Queue Length 95th (ft)	0	0	3	0	17	0
Control Delay (s)	0.0	0.0	1.6	0.0	16.3	0.0
Lane LOS			A		C	A
Approach Delay (s)	0.0		0.8		16.3	0.0
Approach LOS					C	A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
100: S East Ave & Railroad Ave

4/10/2012

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (veh/h)	60	98	108	126	29	144
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	107	117	137	32	157
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			674			
pX, platoon unblocked						
vC, conflicting volume	405	186			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405	186			254	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	88			98	
cM capacity (veh/h)	587	856			1311	

Direction, Lane #	EB 1	SE 1	NW 1
Volume Total	172	254	188
Volume Left	65	0	32
Volume Right	107	137	0
cSH	729	1700	1311
Volume to Capacity	0.24	0.15	0.02
Queue Length 95th (ft)	23	0	2
Control Delay (s)	11.5	0.0	1.5
Lane LOS	B		A
Approach Delay (s)	11.5	0.0	1.5
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
100: S East Ave &

4/10/2012

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (veh/h)	81	51	464	82	52	472
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	55	504	89	57	513
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			674			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1175	549			593	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1133	426			476	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	53	90			94	
cM capacity (veh/h)	187	557			962	

Direction, Lane #	EB 1	SE 1	NW 1
Volume Total	143	593	570
Volume Left	88	0	57
Volume Right	55	89	0
cSH	252	1700	962
Volume to Capacity	0.57	0.35	0.06
Queue Length 95th (ft)	80	0	5
Control Delay (s)	36.7	0.0	1.6
Lane LOS	E		A
Approach Delay (s)	36.7	0.0	1.6
Approach LOS	E		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

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)	104	335	67	137	265	26	24	1336	342	116	1062	95
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	0.99		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)	1947	1998		1947	2022		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	1998		1947	2022		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)	113	364	73	149	288	28	26	1452	372	126	1154	103
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	218	0	0	52
Lane Group Flow (vph)	113	427	0	149	311	0	26	1452	154	126	1154	51
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)	6.2	15.1		7.8	16.7		2.9	25.7	25.7	6.2	29.0	29.0
Effective Green, g (s)	6.2	15.1		7.8	16.7		2.9	25.7	25.7	6.2	29.0	29.0
Actuated g/C Ratio	0.09	0.21		0.11	0.24		0.04	0.36	0.36	0.09	0.41	0.41
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)	171	426		215	477		80	1413	632	171	1595	714
v/s Ratio Prot	0.06	c0.21		c0.08	0.15		0.01	c0.37		c0.06	c0.30	
v/s Ratio Perm									0.09			0.03
v/c Ratio	0.66	1.00		0.69	0.65		0.33	1.03	0.24	0.74	0.72	0.07
Uniform Delay, d1	31.3	27.8		30.3	24.4		33.0	22.5	15.8	31.5	17.5	12.7
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	9.2	44.1		9.3	3.2		2.4	31.3	0.2	15.2	1.7	0.0
Delay (s)	40.5	71.9		39.6	27.6		35.4	53.8	16.0	46.7	19.2	12.8
Level of Service	D	E		D	C		D	D	B	D	B	B
Approach Delay (s)		65.4			31.5			45.9			21.2	
Approach LOS		E			C			D			C	

Intersection Summary

HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
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	29	49	37	6	1	1627	39	18	1992	35
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	0.92		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	1882		1947	2003		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	1882		1947	2003		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)	71	27	32	53	40	7	1	1768	42	20	2165	38
RTOR Reduction (vph)	0	28	0	0	6	0	0	0	13	0	0	7
Lane Group Flow (vph)	71	31	0	53	41	0	1	1768	29	20	2165	31
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)	5.9	9.5		4.3	7.9		1.0	43.6	43.6	2.5	45.1	45.1
Effective Green, g (s)	5.9	9.5		4.3	7.9		1.0	43.6	43.6	2.5	45.1	45.1
Actuated g/C Ratio	0.08	0.13		0.06	0.10		0.01	0.57	0.57	0.03	0.59	0.59
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)	151	236		110	208		26	2236	1001	64	2313	1035
v/s Ratio Prot	c0.04	0.02		0.03	c0.02		0.00	0.45		c0.01	c0.56	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.47	0.13		0.48	0.20		0.04	0.79	0.03	0.31	0.94	0.03
Uniform Delay, d1	33.5	29.5		34.7	31.1		37.0	12.6	7.0	35.9	14.1	6.4
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	2.3	0.3		3.3	0.5		0.6	2.0	0.0	2.8	7.9	0.0
Delay (s)	35.8	29.8		38.0	31.6		37.6	14.6	7.0	38.6	22.0	6.4
Level of Service	D	C		D	C		D	B	A	D	C	A
Approach Delay (s)		33.1			35.0			14.4			21.9	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
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)	378	405	159	954	670	18	180	121	1365	412	254	1838
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	0.96		1.00	1.00			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)	3776	3728		3776	3878			3776	3758		3776	3748
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3728		3776	3878			3776	3758		3776	3748
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)	411	440	173	1037	728	20	196	132	1484	448	276	1998
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	19	0	0	21
Lane Group Flow (vph)	411	585	0	1037	746	0	0	328	1913	0	276	2640
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	17.0	19.0		29.0	31.0			9.0	75.0		11.0	77.0
Effective Green, g (s)	17.0	19.0		29.0	31.0			9.0	75.0		11.0	77.0
Actuated g/C Ratio	0.11	0.13		0.19	0.21			0.06	0.50		0.07	0.51
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)	428	472		730	801			227	1879		277	1924
v/s Ratio Prot	0.11	c0.16		c0.27	0.19			c0.09	0.51		0.07	c0.70
v/s Ratio Perm												
v/c Ratio	0.96	1.24		1.42	0.93			1.68dl	1.02		1.00	1.37
Uniform Delay, d1	66.2	65.5		60.5	58.5			70.5	37.5		69.5	36.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	33.3	124.8		197.2	17.4			223.3	25.4		52.7	170.7
Delay (s)	99.4	190.3		257.7	75.9			293.8	62.9		122.2	207.2
Level of Service	F	F		F	E			F	E		F	F
Approach Delay (s)		153.8			181.5				96.4			199.3
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	160.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	135.7%	ICU Level of Service	H
Analysis Period (min)	15		

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

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	610
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)	663
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)	653	621	517	1124	914	32	281	115	1920	443	502	2388
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	0.97		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	3628		3776	3873			3776	3784		3776	3768
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3776	3628		3776	3873			3776	3784		3776	3768
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)	710	675	562	1222	993	35	305	125	2087	482	546	2596
RTOR Reduction (vph)	0	90	0	0	1	0	0	0	13	0	0	17
Lane Group Flow (vph)	710	1147	0	1222	1027	0	0	430	2556	0	546	3284
Turn Type	Prot			Prot			Prot	Prot			Prot	
Protected Phases	3	8		7	4		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)	15.0	28.0		24.0	37.0			10.0	70.0		12.0	72.0
Effective Green, g (s)	15.0	28.0		24.0	37.0			10.0	70.0		12.0	72.0
Actuated g/C Ratio	0.10	0.19		0.16	0.25			0.07	0.47		0.08	0.48
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)	378	677		604	955			252	1766		302	1809
v/s Ratio Prot	0.19	c0.32		c0.32	0.27			0.11	0.68		c0.14	c0.87
v/s Ratio Perm												
v/c Ratio	1.88	1.69		2.02	1.08			2.35dl	1.45		1.81	1.82
Uniform Delay, d1	67.5	61.0		63.0	56.5			70.0	40.0		69.0	39.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	405.2	318.6		466.2	51.7			334.3	204.5		376.5	369.2
Delay (s)	472.7	379.6		529.2	108.2			404.3	244.5		445.5	408.2
Level of Service	F	F		F	F			F	F		F	F
Approach Delay (s)		413.5			336.9				267.4			413.5
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	358.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.79		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	177.2%	ICU Level of Service	H
Analysis Period (min)	15		

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

c Critical Lane Group

Movement	NWR
Lane Configurations	
Volume (vph)	649
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)	705
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
103: RailRoad Ave & Orange Ave

4/10/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	136	82	35	131	26	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	89	38	142	28	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			237		411	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			237		411	192
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		95	96
cM capacity (veh/h)			1330		580	849

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	237	180	60
Volume Left	0	38	28
Volume Right	89	0	32
cSH	1700	1330	696
Volume to Capacity	0.14	0.03	0.09
Queue Length 95th (ft)	0	2	7
Control Delay (s)	0.0	1.8	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.7
Approach LOS			B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
103: Orange Ave &

4/10/2012

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (veh/h)	64	132	404	90	95	421
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	143	439	98	103	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)						
pX, platoon unblocked						
vC, conflicting volume	1152	488			537	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1152	488			537	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	75			90	
cM capacity (veh/h)	197	580			1031	

Direction, Lane #	EB 1	SE 1	NW 1
Volume Total	213	537	561
Volume Left	70	0	103
Volume Right	143	98	0
cSH	354	1700	1031
Volume to Capacity	0.60	0.32	0.10
Queue Length 95th (ft)	93	0	8
Control Delay (s)	29.4	0.0	2.6
Lane LOS	D		A
Approach Delay (s)	29.4	0.0	2.6
Approach LOS	D		

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
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)	43	8	27	24	17	81	64	1081	79	29	828	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	47	9	29	26	18	88	70	1175	86	32	900	28
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	1879	2348	630	1708	2377	464	928			1261		
vC1, stage 1 conf vol	1357	1357		977	977							
vC2, stage 2 conf vol	522	991		731	1400							
vCu, unblocked vol	1879	2348	630	1708	2377	464	928			1261		
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 %	53	92	93	81	82	84	91			94		
cM capacity (veh/h)	99	111	424	141	105	545	732			547		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	85	133	70	783	478	32	600	328
Volume Left	47	26	70	0	0	32	0	0
Volume Right	29	88	0	0	86	0	0	28
cSH	137	254	732	1700	1700	547	1700	1700
Volume to Capacity	0.62	0.52	0.09	0.46	0.28	0.06	0.35	0.19
Queue Length 95th (ft)	81	69	8	0	0	5	0	0
Control Delay (s)	66.4	33.7	10.4	0.0	0.0	12.0	0.0	0.0
Lane LOS	F	D	B			B		
Approach Delay (s)	66.4	33.7	0.5			0.4		
Approach LOS	F	D						

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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)	123	27	96	15	16	125	156	1562	96	61	1435	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	134	29	104	16	17	136	170	1698	104	66	1560	42
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	3010	3824	901	2916	3855	801	1602			1802		
vC1, stage 1 conf vol	2089	2089		1714	1714							
vC2, stage 2 conf vol	921	1735		1203	2141							
vCu, unblocked vol	3010	3824	901	2916	3855	801	1602			1802		
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 %	0	0	63	0	0	58	58			80		
cM capacity (veh/h)	0	2	281	0	2	327	404			338		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	267	170	170	1132	670	66	1040	562
Volume Left	134	16	170	0	0	66	0	0
Volume Right	104	136	0	0	104	0	0	42
cSH	0	0	404	1700	1700	338	1700	1700
Volume to Capacity	Err	Err	0.42	0.67	0.39	0.20	0.61	0.33
Queue Length 95th (ft)	Err	Err	51	0	0	18	0	0
Control Delay (s)	Err	Err	20.2	0.0	0.0	18.2	0.0	0.0
Lane LOS	F	F	C			C		
Approach Delay (s)	Err	Err	1.7			0.7		
Approach LOS	F	F						

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
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	781	137	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	0.92
Hourly flow rate (vph)	0	504	311	0	0	0	0	0	0	849	149	0
Approach Volume (veh/h)		815			0			0			998	
Crossing Volume (veh/h)		998			0			1353#			0	
High Capacity (veh/h)		624			1385			465			1385	
High v/c (veh/h)		1.31			0.00			0.00			0.72	
Low Capacity (veh/h)		484			1161			349			1161	
Low v/c (veh/h)		1.69			0.00			0.00			0.86	

Intersection Summary			
Maximum v/c High	1.31		
Maximum v/c Low	1.69		
Intersection Capacity Utilization	99.0%	ICU Level of Service	F

Crossing flow exceeds 1200, method is not applicable

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	332	0	0	0	0	0	0	1156	1396	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	361	0	0	0	0	0	0	1427	1723	0
Approach Volume (veh/h)		545			0			0			3151	
Crossing Volume (veh/h)		3151#			0			1611#			0	
High Capacity (veh/h)		97			1385			374			1385	
High v/c (veh/h)		5.61			0.00			0.00			2.28	
Low Capacity (veh/h)		60			1161			274			1161	
Low v/c (veh/h)		9.04			0.00			0.00			2.71	

Intersection Summary			
Maximum v/c High	5.61		
Maximum v/c Low	9.04		
Intersection Capacity Utilization	173.4%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Right Turn Channelized												Yes
Volume (veh/h)	0	0	0	58	222	0	0	0	0	0	859	141
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	0.92
Hourly flow rate (vph)	0	0	0	63	241	0	0	0	0	0	934	153
Approach Volume (veh/h)		0			304			0			934	
Crossing Volume (veh/h)		997			0			0			304	
High Capacity (veh/h)		624			1385			1385			1091	
High v/c (veh/h)		0.00			0.22			0.00			0.86	
Low Capacity (veh/h)		484			1161			1161			895	
Low v/c (veh/h)		0.00			0.26			0.00			1.04	

Intersection Summary				
Maximum v/c High	0.86			
Maximum v/c Low	1.04			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	

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	468	577	0	0	0	0	0	2100	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	600	740	0	0	0	0	0	2958	899
Approach Volume (veh/h)		0			1340			0			2958	
Crossing Volume (veh/h)		3558#			0			0			1340#	
High Capacity (veh/h)		67			1385			1385			470	
High v/c (veh/h)		0.00			0.97			0.00			6.29	
Low Capacity (veh/h)		40			1161			1161			353	
Low v/c (veh/h)		0.00			1.15			0.00			8.37	

Intersection Summary			
Maximum v/c High	6.29		
Maximum v/c Low	8.37		
Intersection Capacity Utilization	173.5%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	545	672	0	0	0	0	0	566	371	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						0.91				
Frt		1.00						0.94				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		3808						5262				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		3808						5262				
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)	592	730	0	0	0	0	0	615	403	0	0	0
RTOR Reduction (vph)	0	84	0	0	0	0	0	61	0	0	0	0
Lane Group Flow (vph)	0	1238	0	0	0	0	0	957	0	0	0	0
Turn Type	Split											
Protected Phases	6	6						4				
Permitted Phases												
Actuated Green, G (s)		15.7						14.0				
Effective Green, g (s)		15.7						14.0				
Actuated g/C Ratio		0.42						0.37				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1586						1954				
v/s Ratio Prot		c0.33						c0.18				
v/s Ratio Perm												
v/c Ratio		0.78						0.49				
Uniform Delay, d1		9.5						9.1				
Progression Factor		1.00						1.00				
Incremental Delay, d2		2.6						0.2				
Delay (s)		12.1						9.3				
Level of Service		B						A				
Approach Delay (s)		12.1			0.0			9.3			0.0	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	37.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.3%	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)	362	957	0	0	0	0	0	404	122	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						0.91				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3840						5399				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3840						5399				
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	402	1063	0	0	0	0	0	454	137	0	0	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	37	0	0	0	0
Lane Group Flow (vph)	0	1387	0	0	0	0	0	554	0	0	0	0
Turn Type	Split											
Protected Phases	6	6						4				
Permitted Phases												
Actuated Green, G (s)		20.0						10.3				
Effective Green, g (s)		20.0						10.3				
Actuated g/C Ratio		0.52						0.27				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		2005						1452				
v/s Ratio Prot		c0.36						c0.10				
v/s Ratio Perm												
v/c Ratio		0.69						0.38				
Uniform Delay, d1		6.8						11.4				
Progression Factor		1.00						1.00				
Incremental Delay, d2		1.0						0.2				
Delay (s)		7.9						11.6				
Level of Service		A						B				
Approach Delay (s)		7.9			0.0			11.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	38.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	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	0	0	0	63	505	210	986	0	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			0.91				
Frt					0.87			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					3374			5545				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					3374			5545				
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)	0	0	0	0	68	549	228	1072	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	79	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	598	0	0	1221	0	0	0	0
Turn Type							Split					
Protected Phases					2		4	4				
Permitted Phases												
Actuated Green, G (s)					12.0			15.1				
Effective Green, g (s)					12.0			15.1				
Actuated g/C Ratio					0.34			0.43				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1154			2385				
v/s Ratio Prot					c0.18			c0.22				
v/s Ratio Perm												
v/c Ratio					0.88dr			0.51				
Uniform Delay, d1					9.2			7.3				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.4			0.2				
Delay (s)					9.6			7.5				
Level of Service					A			A				
Approach Delay (s)		0.0			9.6			7.5			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	35.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	664	793	371	397	0	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			0.91				
Frt					0.92			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					3575			5462				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					3575			5462				
Peak-hour factor, PHF	0.92	0.92	0.92	0.73	0.73	0.73	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	910	1086	412	441	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	47	0	0	112	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1949	0	0	741	0	0	0	0
Turn Type							Split					
Protected Phases					2		4	4				
Permitted Phases												
Actuated Green, G (s)					36.0			14.2				
Effective Green, g (s)					36.0			14.2				
Actuated g/C Ratio					0.62			0.24				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					2211			1333				
v/s Ratio Prot					c0.55			c0.14				
v/s Ratio Perm												
v/c Ratio					0.95dr			0.56				
Uniform Delay, d1					9.3			19.2				
Progression Factor					1.00			1.00				
Incremental Delay, d2					4.5			0.5				
Delay (s)					13.8			19.7				
Level of Service					B			B				
Approach Delay (s)		0.0			13.8			19.7			0.0	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	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	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	15	557	516	0	52	956
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	1.00	1.00		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	1742	2049		1947	3893
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	1742	2049		1947	3893
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	605	561	0	57	1039
RTOR Reduction (vph)	0	209	0	0	0	0
Lane Group Flow (vph)	16	396	561	0	57	1039
Turn Type		Prot			Prot	
Protected Phases	2	2	4		3	8
Permitted Phases						
Actuated Green, G (s)	14.1	14.1	18.0		2.0	24.0
Effective Green, g (s)	14.1	14.1	18.0		2.0	24.0
Actuated g/C Ratio	0.31	0.31	0.39		0.04	0.52
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)	596	533	800		84	2027
v/s Ratio Prot	0.01	c0.23	c0.27		0.03	c0.27
v/s Ratio Perm						
v/c Ratio	0.03	0.74	0.70		0.68	0.51
Uniform Delay, d1	11.2	14.4	11.8		21.7	7.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	5.6	2.8		19.6	0.2
Delay (s)	11.2	19.9	14.6		41.3	7.4
Level of Service	B	B	B		D	A
Approach Delay (s)	19.7		14.6			9.2
Approach LOS	B		B			A

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	530	887	414	0	42	1883
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	1.00	1.00		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	1742	2049		1947	3893
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	1742	2049		1947	3893
Peak-hour factor, PHF	0.89	0.89	0.92	0.92	0.89	0.89
Adj. Flow (vph)	596	997	450	0	47	2116
RTOR Reduction (vph)	0	229	0	0	0	0
Lane Group Flow (vph)	596	768	450	0	47	2116
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8
Permitted Phases		2				
Actuated Green, G (s)	49.0	49.0	53.6		6.2	63.8
Effective Green, g (s)	49.0	49.0	53.6		6.2	63.8
Actuated g/C Ratio	0.41	0.41	0.44		0.05	0.53
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)	790	707	909		100	2056
v/s Ratio Prot	0.31		0.22		0.02	c0.54
v/s Ratio Perm		c0.44				
v/c Ratio	0.75	1.09	0.50		0.47	1.03
Uniform Delay, d1	30.7	35.9	24.0		55.7	28.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.1	59.5	0.4		3.5	27.7
Delay (s)	34.9	95.4	24.4		59.2	56.2
Level of Service	C	F	C		E	E
Approach Delay (s)	72.7		24.4			56.3
Approach LOS	E		C			E

Intersection Summary

HCM Average Control Delay	59.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
110: F St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	55	0	0	48	0	522	0	126	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	0.92	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)	0	60	0	0	52	0	567	0	137	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	66	0	0	0
Lane Group Flow (vph)	0	60	0	0	52	0	567	0	71	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)		6.5			6.5		15.4		15.4			
Effective Green, g (s)		6.5			6.5		15.4		15.4			
Actuated g/C Ratio		0.22			0.22		0.52		0.52			
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)		445			445		1003		897			
v/s Ratio Prot		c0.03			0.03		c0.29					
v/s Ratio Perm									0.04			
v/c Ratio		0.13			0.12		0.57		0.08			
Uniform Delay, d1		9.4			9.4		5.0		3.7			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.1			0.1		0.7		0.0			
Delay (s)		9.6			9.5		5.7		3.7			
Level of Service		A			A		A		A			
Approach Delay (s)		9.6			9.5			5.3			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	29.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
110: F St & Tuolumne St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	37	0	0	995	0	435	0	173	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	49	0	0	1363	0	468	0	186	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	140	0	0	0
Lane Group Flow (vph)	0	49	0	0	1363	0	468	0	46	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)		90.0			90.0		32.0		32.0			
Effective Green, g (s)		90.0			90.0		32.0		32.0			
Actuated g/C Ratio		0.69			0.69		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)		1419			1419		479		429			
v/s Ratio Prot		0.02			c0.67		c0.24					
v/s Ratio Perm									0.03			
v/c Ratio		0.03			0.96		0.98		0.11			
Uniform Delay, d1		6.3			18.4		48.6		37.9			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			15.5		34.8		0.1			
Delay (s)		6.3			33.8		83.5		38.0			
Level of Service		A			C		F		D			
Approach Delay (s)		6.3			33.8			70.5			0.0	
Approach LOS		A			C			E			A	

Intersection Summary

HCM Average Control Delay	44.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
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	656	192	18	100	0	0	264	200	56	531	91
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		1.00	1.00			0.94		1.00	0.98	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1979		1947	2049			1917		1947	2004	
Flt Permitted		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1979		1947	2049			1917		1947	2004	
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)	0	713	209	20	109	0	0	287	217	61	577	99
RTOR Reduction (vph)	0	10	0	0	0	0	0	27	0	0	5	0
Lane Group Flow (vph)	0	912	0	20	109	0	0	477	0	61	671	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		44.3		1.5	49.8			29.2		3.9	37.1	
Effective Green, g (s)		44.3		1.5	49.8			29.2		3.9	37.1	
Actuated g/C Ratio		0.47		0.02	0.52			0.31		0.04	0.39	
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)		924		31	1075			590		80	783	
v/s Ratio Prot		c0.46		c0.01	0.05			0.25		0.03	c0.33	
v/s Ratio Perm												
v/c Ratio		0.99		0.65	0.10			0.81		0.76	0.86	
Uniform Delay, d1		25.0		46.4	11.3			30.3		45.0	26.5	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		26.1		37.9	0.0			8.0		34.2	9.1	
Delay (s)		51.1		84.3	11.4			38.3		79.2	35.6	
Level of Service		D		F	B			D		E	D	
Approach Delay (s)		51.1			22.7			38.3			39.2	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
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	468	107	123	185	0	0	321	0	0	1642	147
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		0.97		1.00	1.00			1.00			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1992		1947	2049			2049			2024	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1992		1947	2049			2049			2024	
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	571	130	256	385	0	0	349	0	0	2189	196
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	696	0	256	385	0	0	349	0	0	2383	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		34.0		11.0	49.0			85.0			85.0	
Effective Green, g (s)		34.0		11.0	49.0			85.0			85.0	
Actuated g/C Ratio		0.24		0.08	0.35			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)		477		151	707			1227			1212	
v/s Ratio Prot		c0.35		c0.13	0.19			0.17			c1.18	
v/s Ratio Perm												
v/c Ratio		1.46		1.70	0.54			0.28			1.97	
Uniform Delay, d1		54.0		65.5	37.5			13.8			28.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		217.7		339.7	0.9			0.1			437.8	
Delay (s)		271.7		405.2	38.4			13.9			466.3	
Level of Service		F		F	D			B			F	
Approach Delay (s)		271.7			184.9			13.9			466.3	
Approach LOS		F			F			B			F	

Intersection Summary

HCM Average Control Delay	349.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	725	0	220	386	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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	788	0	239	420	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	788	0	239	420	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	21.5		13.6	13.6		
Effective Green, g (s)	21.5		13.6	13.6		
Actuated g/C Ratio	0.50		0.32	0.32		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	971		490	647		
v/s Ratio Prot	c0.40			c0.20		
v/s Ratio Perm			0.15			
v/c Ratio	0.81		0.49	0.65		
Uniform Delay, d1	9.1		11.9	12.7		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	5.2		0.8	2.3		
Delay (s)	14.3		12.7	14.9		
Level of Service	B		B	B		
Approach Delay (s)	14.3			14.1	0.0	
Approach LOS	B			B	A	

Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	43.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	328	0	298	238	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)	405	0	359	287	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	405	0	359	287	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	12.4		12.4	12.4		
Effective Green, g (s)	12.4		12.4	12.4		
Actuated g/C Ratio	0.38		0.38	0.38		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	736		587	775		
v/s Ratio Prot	c0.21			0.14		
v/s Ratio Perm			c0.23			
v/c Ratio	0.55		0.61	0.37		
Uniform Delay, d1	8.0		8.3	7.4		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	0.9		1.9	0.3		
Delay (s)	8.9		10.1	7.7		
Level of Service	A		B	A		
Approach Delay (s)	8.9			9.0	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	32.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.3%	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	171	21	115	122	0	0	0	0	202	640	6
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		0.99			1.00					1.00	1.00	
Flt Protected		1.00			0.98					0.95	1.00	
Satd. Flow (prot)		2019			2001					1947	2046	
Flt Permitted		1.00			0.98					0.95	1.00	
Satd. Flow (perm)		2019			2001					1947	2046	
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)	0	186	23	125	133	0	0	0	0	220	696	7
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	203	0	0	258	0	0	0	0	220	702	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	6	6		2	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		11.7			13.0					27.6	27.6	
Effective Green, g (s)		11.7			13.0					27.6	27.6	
Actuated g/C Ratio		0.18			0.20					0.43	0.43	
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)		367			405					836	878	
v/s Ratio Prot		c0.10			c0.13					0.11	c0.34	
v/s Ratio Perm												
v/c Ratio		0.55			0.64					0.26	0.80	
Uniform Delay, d1		23.9			23.5					11.8	16.0	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		1.8			3.3					0.2	5.3	
Delay (s)		25.7			26.8					12.0	21.2	
Level of Service		C			C					B	C	
Approach Delay (s)		25.7			26.8			0.0			19.0	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized 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 (vph)	0	129	72	230	476	0	0	0	0	226	1516	14
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		0.95			1.00					1.00	1.00	
Flt Protected		1.00			0.98					0.95	1.00	
Satd. Flow (prot)		1950			2016					1947	2046	
Flt Permitted		1.00			0.98					0.95	1.00	
Satd. Flow (perm)		1950			2016					1947	2046	
Peak-hour factor, PHF	0.77	0.77	0.77	0.75	0.75	0.75	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	168	94	307	635	0	0	0	0	279	1872	17
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	249	0	0	942	0	0	0	0	279	1889	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	6	6		2	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		16.0			42.0					72.0	72.0	
Effective Green, g (s)		16.0			42.0					72.0	72.0	
Actuated g/C Ratio		0.11			0.30					0.51	0.51	
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)		220			596					987	1037	
v/s Ratio Prot		c0.13			c0.47					0.14	c0.92	
v/s Ratio Perm												
v/c Ratio		1.13			1.58					0.28	1.82	
Uniform Delay, d1		63.0			50.0					20.1	35.0	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		100.2			269.2					0.2	373.5	
Delay (s)		163.2			319.2					20.3	408.5	
Level of Service		F			F					C	F	
Approach Delay (s)		163.2			319.2			0.0			358.6	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	332.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	139.6%	ICU Level of Service	H
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	640	0	0	120	48	180	552	89	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				
Lane Util. Factor		1.00			1.00			0.95				
Frt		1.00			0.96			0.98				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2044			1970			3788				
Flt Permitted		0.98			1.00			0.99				
Satd. Flow (perm)		2010			1970			3788				
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)	36	696	0	0	130	52	196	600	97	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	732	0	0	153	0	0	872	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		6			2		4	4				
Permitted Phases	6											
Actuated Green, G (s)		18.5			18.5			14.5				
Effective Green, g (s)		18.5			18.5			14.5				
Actuated g/C Ratio		0.45			0.45			0.35				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		907			889			1340				
v/s Ratio Prot					0.08			c0.23				
v/s Ratio Perm		c0.36										
v/c Ratio		0.81			0.17			0.65				
Uniform Delay, d1		9.7			6.7			11.1				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		5.3			0.1			1.1				
Delay (s)		15.0			6.8			12.3				
Level of Service		B			A			B				
Approach Delay (s)		15.0			6.8			12.3			0.0	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	41.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.1%	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)	53	78	0	0	250	140	48	670	34	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				
Lane Util. Factor		1.00			1.00			0.95				
Frt		1.00			0.95			0.99				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		2008			1950			3855				
Flt Permitted		0.61			1.00			1.00				
Satd. Flow (perm)		1254			1950			3855				
Peak-hour factor, PHF	0.79	0.79	0.79	0.74	0.74	0.74	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	67	99	0	0	338	189	50	698	35	0	0	0
RTOR Reduction (vph)	0	0	0	0	53	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	166	0	0	474	0	0	774	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		6			2		4	4				
Permitted Phases	6											
Actuated Green, G (s)		12.6			12.6			13.1				
Effective Green, g (s)		12.6			12.6			13.1				
Actuated g/C Ratio		0.37			0.37			0.39				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		469			729			1499				
v/s Ratio Prot					c0.24			c0.20				
v/s Ratio Perm		0.13										
v/c Ratio		0.35			0.65			0.52				
Uniform Delay, d1		7.6			8.7			7.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.5			2.1			0.3				
Delay (s)		8.1			10.8			8.2				
Level of Service		A			B			A				
Approach Delay (s)		8.1			10.8			8.2			0.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	33.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.7%	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)	0	444	230	0	0	0	0	0	0	757	617	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	
Lane Util. Factor		1.00								1.00	1.00	
Frt		0.95								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1955								1947	2039	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1955								1947	2039	
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)	0	483	250	0	0	0	0	0	0	823	671	22
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	720	0	0	0	0	0	0	0	823	692	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		47.0								54.3	54.3	
Effective Green, g (s)		47.0								54.3	54.3	
Actuated g/C Ratio		0.43								0.50	0.50	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		841								967	1013	
v/s Ratio Prot		c0.37								c0.42	0.34	
v/s Ratio Perm												
v/c Ratio		0.86								0.85	0.68	
Uniform Delay, d1		28.1								24.0	20.9	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		8.6								7.3	1.9	
Delay (s)		36.7								31.3	22.9	
Level of Service		D								C	C	
Approach Delay (s)		36.7			0.0			0.0			27.4	
Approach LOS		D			A			A			C	

Intersection Summary

HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.0%	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	365	403	0	0	0	0	0	0	589	1352	50
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	0.99	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		1904								1947	2038	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1904								1947	2038	
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	440	486	0	0	0	0	0	0	701	1610	60
RTOR Reduction (vph)	0	26	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	900	0	0	0	0	0	0	0	701	1669	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		51.0								83.0	83.0	
Effective Green, g (s)		51.0								83.0	83.0	
Actuated g/C Ratio		0.36								0.58	0.58	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		684								1138	1191	
v/s Ratio Prot		c0.47								0.36	c0.82	
v/s Ratio Perm												
v/c Ratio		1.32								0.62	1.40	
Uniform Delay, d1		45.5								19.2	29.5	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		152.6								1.0	185.8	
Delay (s)		198.1								20.2	215.3	
Level of Service		F								C	F	
Approach Delay (s)		198.1			0.0			0.0			157.6	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	169.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
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)	106	1107	0	0	0	0	0	508	168	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		1.00						1.00				
Satd. Flow (prot)		3876						3748				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		3876						3748				
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)	115	1203	0	0	0	0	0	552	183	0	0	0
RTOR Reduction (vph)	0	17	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1301	0	0	0	0	0	723	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		15.8						13.0				
Effective Green, g (s)		15.8						13.0				
Actuated g/C Ratio		0.43						0.35				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1664						1324				
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.34										
v/c Ratio		0.78						0.55				
Uniform Delay, d1		9.0						9.5				
Progression Factor		1.00						1.00				
Incremental Delay, d2		2.5						0.5				
Delay (s)		11.5						10.0				
Level of Service		B						B				
Approach Delay (s)		11.5			0.0			10.0			0.0	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	36.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	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)	260	704	0	0	0	0	0	587	298	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						0.95				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3841						3697				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3841						3697				
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)	289	782	0	0	0	0	0	631	320	0	0	0
RTOR Reduction (vph)	0	82	0	0	0	0	0	50	0	0	0	0
Lane Group Flow (vph)	0	989	0	0	0	0	0	901	0	0	0	0
Turn Type	Perm											
Protected Phases		6						4				
Permitted Phases	6											
Actuated Green, G (s)		15.0						14.5				
Effective Green, g (s)		15.0						14.5				
Actuated g/C Ratio		0.40						0.39				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		3.0						3.0				
Lane Grp Cap (vph)		1536						1430				
v/s Ratio Prot								c0.24				
v/s Ratio Perm		0.26										
v/c Ratio		0.64						0.63				
Uniform Delay, d1		9.1						9.3				
Progression Factor		1.00						1.00				
Incremental Delay, d2		0.9						0.9				
Delay (s)		10.0						10.2				
Level of Service		B						B				
Approach Delay (s)		10.0			0.0			10.2			0.0	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	10.1	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	59.4%	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	221	40	239	44	0	0	0	0	388	1006	13
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		0.98		1.00	1.00					1.00	1.00	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		2002		1947	2049					1947	2045	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		2002		1947	2049					1947	2045	
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)	0	240	43	260	48	0	0	0	0	422	1093	14
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	276	0	260	48	0	0	0	0	422	1107	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		15.5		13.0	32.5					51.0	51.0	
Effective Green, g (s)		15.5		13.0	32.5					51.0	51.0	
Actuated g/C Ratio		0.17		0.14	0.36					0.56	0.56	
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)		339		277	728					1085	1140	
v/s Ratio Prot		c0.14		c0.13	0.02					0.22	c0.54	
v/s Ratio Perm												
v/c Ratio		0.82		0.94	0.07					0.39	0.97	
Uniform Delay, d1		36.6		38.9	19.5					11.4	19.5	
Progression Factor		1.00		1.00	1.00					1.00	1.00	
Incremental Delay, d2		14.0		37.5	0.0					0.2	19.9	
Delay (s)		50.6		76.3	19.5					11.7	39.4	
Level of Service		D		E	B					B	D	
Approach Delay (s)		50.6			67.5			0.0			31.7	
Approach LOS		D			E			A			C	

Intersection Summary

HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized 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 (vph)	0	122	33	392	462	0	0	0	0	339	1706	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	1.00	
Frt		0.97		1.00	1.00					1.00	1.00	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		1984		1947	2049					1947	2049	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		1984		1947	2049					1947	2049	
Peak-hour factor, PHF	0.55	0.55	0.55	0.57	0.57	0.57	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	0	222	60	688	811	0	0	0	0	399	2007	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	276	0	688	811	0	0	0	0	399	2007	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		19.0		28.0	51.0					83.0	83.0	
Effective Green, g (s)		19.0		28.0	51.0					83.0	83.0	
Actuated g/C Ratio		0.13		0.20	0.36					0.58	0.58	
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)		265		384	736					1138	1198	
v/s Ratio Prot		0.14		c0.35	c0.40					0.20	c0.98	
v/s Ratio Perm												
v/c Ratio		1.04		1.79	1.10					0.35	1.68	
Uniform Delay, d1		61.5		57.0	45.5					15.4	29.5	
Progression Factor		1.00		1.00	1.00					1.00	1.00	
Incremental Delay, d2		66.5		366.6	64.6					0.2	307.6	
Delay (s)		128.0		423.6	110.1					15.6	337.1	
Level of Service		F		F	F					B	F	
Approach Delay (s)		128.0			254.0			0.0			283.8	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	262.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	129.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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)	46	108	0	0	271	80	59	759	31	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		1.00				
Satd. Flow (prot)	1947	2049			2049	1742		3859				
Flt Permitted	0.35	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	707	2049			2049	1742		3859				
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)	64	150	0	0	459	136	79	1012	41	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	23	0	6	0	0	0	0
Lane Group Flow (vph)	64	150	0	0	459	113	0	1126	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	12.8	12.8			12.8	12.8		15.2				
Effective Green, g (s)	12.8	12.8			12.8	12.8		15.2				
Actuated g/C Ratio	0.36	0.36			0.36	0.36		0.42				
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)	251	729			729	619		1629				
v/s Ratio Prot		0.07			c0.22							
v/s Ratio Perm	0.09					0.06		0.29				
v/c Ratio	0.25	0.21			0.63	0.18		0.69				
Uniform Delay, d1	8.2	8.1			9.6	8.0		8.5				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.5	0.1			1.7	0.1		1.3				
Delay (s)	8.8	8.2			11.3	8.1		9.8				
Level of Service	A	A			B	A		A				
Approach Delay (s)		8.4			10.6			9.8			0.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	36.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.3%	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)	152	390	0	0	248	47	112	453	44	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		3816				
Flt Permitted	0.59	1.00			1.00	1.00		0.99				
Satd. Flow (perm)	1215	2049			2049	1742		3816				
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)	165	424	0	0	270	51	122	492	48	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	32	0	15	0	0	0	0
Lane Group Flow (vph)	165	424	0	0	270	19	0	647	0	0	0	0
Turn Type	Perm					Perm	Perm					
Protected Phases		6			2			4				
Permitted Phases	6					2	4					
Actuated Green, G (s)	12.0	12.0			12.0	12.0		11.9				
Effective Green, g (s)	12.0	12.0			12.0	12.0		11.9				
Actuated g/C Ratio	0.38	0.38			0.38	0.38		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)	457	771			771	655		1424				
v/s Ratio Prot		c0.21			0.13							
v/s Ratio Perm	0.14					0.01		0.17				
v/c Ratio	0.36	0.55			0.35	0.03		0.45				
Uniform Delay, d1	7.2	7.8			7.1	6.3		7.5				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	0.5	0.8			0.3	0.0		0.2				
Delay (s)	7.7	8.6			7.4	6.3		7.8				
Level of Service	A	A			A	A		A				
Approach Delay (s)		8.4			7.2			7.8			0.0	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	31.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	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)	1814	337	288	1598	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1972	366	313	1737	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			2338		3649	1169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2338		3649	1169
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			0		0	100
cM capacity (veh/h)			208		0	186

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	1314	1024	892	1158
Volume Left	0	0	313	0
Volume Right	0	366	0	0
cSH	1700	1700	208	1700
Volume to Capacity	0.77	0.60	1.50	0.68
Queue Length 95th (ft)	0	0	481	0
Control Delay (s)	0.0	0.0	292.5	0.0
Lane LOS			F	
Approach Delay (s)	0.0		127.3	
Approach LOS				

Intersection Summary			
Average Delay	59.5		
Intersection Capacity Utilization	120.1%	ICU Level of Service	H
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)	1556	247	227	2538	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1691	268	247	2759	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			1960		3698	980
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1960		3698	980
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			16		100	100
cM capacity (veh/h)			293		1	249

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	1128	832	1166	1839
Volume Left	0	0	247	0
Volume Right	0	268	0	0
cSH	1700	1700	293	1700
Volume to Capacity	0.66	0.49	0.84	1.08
Queue Length 95th (ft)	0	0	178	0
Control Delay (s)	0.0	0.0	58.4	0.0
Lane LOS			F	
Approach Delay (s)	0.0		22.7	
Approach LOS				

Intersection Summary			
Average Delay	13.7		
Intersection Capacity Utilization	134.3%	ICU Level of Service	H
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)	30	1788	0	0	1434	9	319	8	135	3	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	33	1943	0	0	1559	10	347	9	147	3	0	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)					1142							
pX, platoon unblocked	0.66						0.66	0.66		0.66	0.66	0.66
vC, conflicting volume	1568			1943			2791	3577	972	2605	3572	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	819			1943			2682	3879	972	2398	3872	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 %	94			100			0	0	42	0	100	100
cM capacity (veh/h)	529			298			7	2	252	0	2	712

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	680	1296	1039	529	502	7
Volume Left	33	0	0	0	347	3
Volume Right	0	0	0	10	147	3
cSH	529	1700	1700	1700	9	0
Volume to Capacity	0.06	0.76	0.61	0.31	57.71	Err
Queue Length 95th (ft)	5	0	0	0	Err	Err
Control Delay (s)	1.8	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	0.6		0.0		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
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)	9	1548	0	0	2383	2	374	3	287	21	0	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	10	1683	0	0	2590	2	407	3	312	23	0	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)					1142							
pX, platoon unblocked	0.68						0.68	0.68		0.68	0.68	0.68
vC, conflicting volume	2592			1683			3031	4295	841	3454	4293	1296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2403			1683			3045	4896	841	3665	4894	505
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			0	0	0	0	100	90
cM capacity (veh/h)	134			376			3	0	308	0	0	350

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	571	1122	1727	866	722	57
Volume Left	10	0	0	0	407	23
Volume Right	0	0	0	2	312	34
cSH	134	1700	1700	1700	5	0
Volume to Capacity	0.07	0.66	1.02	0.51	136.74	Err
Queue Length 95th (ft)	6	0	0	0	Err	Err
Control Delay (s)	4.2	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	1.4		0.0		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	200	1542	188	605	1251	103	413	839	173	75	219	79
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		6.7	6.7		6.7	6.7	
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	0.99		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	3482		1770	3499		1770	3448		1770	3398	
Flt Permitted	0.15	1.00		0.15	1.00		0.56	1.00		0.16	1.00	
Satd. Flow (perm)	272	3482		272	3499		1035	3448		298	3398	
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)	217	1676	204	658	1360	112	449	912	188	82	238	86
RTOR Reduction (vph)	0	14	0	0	9	0	0	8	0	0	2	0
Lane Group Flow (vph)	217	1866	0	658	1463	0	449	1092	0	82	322	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	27.4	27.4		27.4	27.4		25.0	25.0		25.0	25.0	
Effective Green, g (s)	27.4	27.4		27.4	27.4		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.38	0.38		0.38	0.38	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.7	6.7		6.7	6.7	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	115	1468		115	1475		398	1326		115	1307	
v/s Ratio Prot		0.54			0.42			0.32			0.09	
v/s Ratio Perm	0.80			c2.42			c0.43			0.28		
v/c Ratio	1.89	1.27		5.72	0.99		1.13	0.82		0.71	0.25	
Uniform Delay, d1	18.8	18.8		18.8	18.7		20.0	18.0		17.0	13.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	430.0	127.4		2143.6	21.4		84.8	4.8		22.8	0.2	
Delay (s)	448.8	146.2		2162.4	40.1		104.8	22.8		39.8	13.8	
Level of Service	F	F		F	D		F	C		D	B	
Approach Delay (s)		177.5			695.7			46.6			19.0	
Approach LOS		F			F			D			B	

Intersection Summary

HCM Average Control Delay	312.8	HCM Level of Service	F
HCM Volume to Capacity ratio	3.54		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	148.5%	ICU Level of Service	H
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	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	277	1326	206	465	1661	280	316	623	283	491	1239	378
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		6.7	6.7		6.7	6.7	
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	0.95		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	3468		1770	3463		1770	3373		1770	3415	
Flt Permitted	0.18	1.00		0.18	1.00		0.16	1.00		0.21	1.00	
Satd. Flow (perm)	337	3468		337	3463		295	3373		385	3415	
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)	301	1441	224	505	1805	304	343	677	308	534	1347	411
RTOR Reduction (vph)	0	21	0	0	9	0	0	1	0	0	3	0
Lane Group Flow (vph)	301	1644	0	505	2100	0	343	984	0	534	1755	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	22.1	22.1		22.1	22.1		25.3	25.3		25.3	25.3	
Effective Green, g (s)	22.1	22.1		22.1	22.1		25.3	25.3		25.3	25.3	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.42	0.42		0.42	0.42	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.7	6.7		6.7	6.7	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	124	1277		124	1276		124	1422		162	1440	
v/s Ratio Prot		0.47			0.61			0.29			0.51	
v/s Ratio Perm	0.89			c1.50			1.16			c1.39		
v/c Ratio	2.43	1.29		4.07	1.65		2.77	0.69		3.30	1.22	
Uniform Delay, d1	18.9	18.9		18.9	18.9		17.4	14.2		17.4	17.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	666.1	135.4		1401.6	294.2		816.9	1.9		1049.0	105.0	
Delay (s)	685.1	154.4		1420.6	313.2		834.2	16.0		1066.4	122.4	
Level of Service	F	F		F	F		F	B		F	F	
Approach Delay (s)		235.6			527.1			227.4			342.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	357.0	HCM Level of Service	F
HCM Volume to Capacity ratio	3.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	156.3%	ICU Level of Service	H
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)	689	1187	91	55	898	175	237	415	10	165	816	599
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	1.00		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	3527		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	3527		1770	3539	1583
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)	749	1290	99	60	976	190	258	451	11	179	887	651
RTOR Reduction (vph)	0	0	19	0	12	0	0	1	0	0	0	155
Lane Group Flow (vph)	749	1290	80	60	1154	0	258	461	0	179	887	496
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)	35.0	63.6	34.9	6.3	34.9		14.0	33.1		10.0	29.1	33.1
Effective Green, g (s)	35.0	63.6	34.9	6.3	34.9		14.0	33.1		10.0	29.1	33.1
Actuated g/C Ratio	0.27	0.49	0.27	0.05	0.27		0.11	0.25		0.08	0.22	0.25
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)	474	1721	422	85	921		189	893		135	787	401
v/s Ratio Prot	c0.42	0.36		0.03	c0.33		c0.15	0.13		0.10	0.25	
v/s Ratio Perm			0.05									c0.31
v/c Ratio	1.58	0.75	0.19	0.71	1.25		1.37	0.52		1.33	1.13	1.24
Uniform Delay, d1	47.9	27.2	37.0	61.3	48.0		58.4	42.0		60.4	50.9	48.9
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	271.0	2.3	0.5	19.5	122.6		194.4	1.1		188.8	73.1	126.8
Delay (s)	318.9	29.4	37.5	80.8	170.6		252.8	43.0		249.2	123.9	175.6
Level of Service	F	C	D	F	F		F	D		F	F	F
Approach Delay (s)		131.2			166.2			118.2			156.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	144.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	17.8
Intersection Capacity Utilization	119.1%	ICU Level of Service	H
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)	865	1054	102	99	1316	309	345	660	22	429	771	618
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	1.00		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	3438		1770	3522		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	3438		1770	3522		1770	3539	1583
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)	940	1146	111	108	1430	336	375	717	24	466	838	672
RTOR Reduction (vph)	0	0	21	0	13	0	0	2	0	0	0	147
Lane Group Flow (vph)	940	1146	90	108	1753	0	375	739	0	466	838	525
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)	36.0	68.0	45.1	13.1	45.1		16.0	31.1		20.0	35.1	31.1
Effective Green, g (s)	36.0	68.0	45.1	13.1	45.1		16.0	31.1		20.0	35.1	31.1
Actuated g/C Ratio	0.24	0.45	0.30	0.09	0.30		0.11	0.21		0.13	0.23	0.21
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)	425	1604	476	155	1034		189	730		236	828	328
v/s Ratio Prot	c0.53	0.32		0.06	c0.51		0.21	0.21		c0.26	c0.24	
v/s Ratio Perm			0.06									c0.33
v/c Ratio	2.21	0.71	0.19	0.70	1.70		1.98	1.01		1.97	1.01	1.60
Uniform Delay, d1	57.0	33.2	38.9	66.5	52.5		67.0	59.5		65.0	57.5	59.5
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	552.9	2.0	0.4	10.5	317.0		461.3	36.6		453.5	34.3	284.7
Delay (s)	609.9	35.1	39.3	77.0	369.4		528.3	96.0		518.5	91.7	344.1
Level of Service	F	D	D	E	F		F	F		F	F	F
Approach Delay (s)		281.3			352.6			241.3			278.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	292.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	151.7%	ICU Level of Service	H
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	693	691	478	292	0	0	0	0	918	0	446
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		0.95		1.00	0.95						1.00	
Frt		0.93		1.00	1.00						0.96	
Flt Protected		1.00		0.95	1.00						0.97	
Satd. Flow (prot)		3274		1770	3539						1723	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3274		1770	3539						1723	
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)	0	753	751	520	317	0	0	0	0	998	0	485
RTOR Reduction (vph)	0	120	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	1384	0	520	317	0	0	0	0	0	1471	0
Turn Type				Prot						Perm		
Protected Phases		4		3	8						6	
Permitted Phases										6		
Actuated Green, G (s)		38.0		24.0	66.0						76.0	
Effective Green, g (s)		38.0		24.0	66.0						76.0	
Actuated g/C Ratio		0.25		0.16	0.44						0.51	
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)		829		283	1557						873	
v/s Ratio Prot		c0.42		c0.29	0.09							
v/s Ratio Perm											0.85	
v/c Ratio		1.67		1.84	0.20						1.69	
Uniform Delay, d1		56.0		63.0	25.8						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		306.5		390.3	0.1						313.3	
Delay (s)		362.5		453.3	25.9						350.3	
Level of Service		F		F	C						F	
Approach Delay (s)		362.5			291.4			0.0			350.3	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	342.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	163.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized 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 (vph)	0	715	614	587	414	0	0	0	0	763	0	519
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		0.95		1.00	0.95						1.00	
Frt		0.93		1.00	1.00						0.95	
Flt Protected		1.00		0.95	1.00						0.97	
Satd. Flow (prot)		3294		1770	3539						1710	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3294		1770	3539						1710	
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)	0	777	667	638	450	0	0	0	0	829	0	564
RTOR Reduction (vph)	0	111	0	0	0	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	1333	0	638	450	0	0	0	0	0	1376	0
Turn Type				Prot						Perm		
Protected Phases		4		3	8						6	
Permitted Phases										6		
Actuated Green, G (s)		34.0		28.0	66.0						66.0	
Effective Green, g (s)		34.0		28.0	66.0						66.0	
Actuated g/C Ratio		0.24		0.20	0.47						0.47	
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)		800		354	1668						806	
v/s Ratio Prot		c0.40		c0.36	0.13							
v/s Ratio Perm											0.80	
v/c Ratio		1.67		1.80	0.27						1.71	
Uniform Delay, d1		53.0		56.0	22.4						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		305.6		372.1	0.1						323.3	
Delay (s)		358.6		428.1	22.5						360.3	
Level of Service		F		F	C						F	
Approach Delay (s)		358.6			260.3			0.0			360.3	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	332.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	206.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	447	1143	0	0	634	188	143	0	295	0	0
Ideal Flow (vphpl)	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	0.95			0.95			1.00	1.00		
Frt	1.00	1.00			0.97			1.00	0.85		
Flt Protected	0.95	1.00			1.00			0.95	1.00		
Satd. Flow (prot)	1770	3539			3418			1770	1583		
Flt Permitted	0.95	1.00			1.00			0.95	1.00		
Satd. Flow (perm)	1770	3539			3418			1770	1583		
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
Adj. Flow (vph)	486	1242	0	0	689	204	155	0	321	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	0	66	0	0
Lane Group Flow (vph)	486	1242	0	0	854	0	0	155	255	0	0
Turn Type	Prot						Perm		Perm		
Protected Phases	7	4			8			2			
Permitted Phases							2		2		
Actuated Green, G (s)	20.7	43.4			18.7			14.2	14.2		
Effective Green, g (s)	20.7	43.4			18.7			14.2	14.2		
Actuated g/C Ratio	0.32	0.66			0.29			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)	559	2341			974			383	343		
v/s Ratio Prot	c0.27	0.35			c0.25						
v/s Ratio Perm								0.09	c0.16		
v/c Ratio	0.87	0.53			0.88			0.40	0.74		
Uniform Delay, d1	21.2	5.8			22.4			22.1	24.0		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	13.5	0.2			9.0			0.7	8.5		
Delay (s)	34.7	6.0			31.3			22.8	32.5		
Level of Service	C	A			C			C	C		
Approach Delay (s)		14.1			31.3			29.3		0.0	
Approach LOS		B			C			C		A	

Intersection Summary

HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	163.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	769	406	0	0	736	627	919	0	587	0	0
Ideal Flow (vphpl)	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	0.95			0.95			1.00	1.00		
Frt	1.00	1.00			0.93			1.00	0.85		
Flt Protected	0.95	1.00			1.00			0.95	1.00		
Satd. Flow (prot)	1770	3539			3295			1770	1583		
Flt Permitted	0.95	1.00			1.00			0.95	1.00		
Satd. Flow (perm)	1770	3539			3295			1770	1583		
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
Adj. Flow (vph)	836	441	0	0	800	682	999	0	638	0	0
RTOR Reduction (vph)	0	0	0	0	103	0	0	0	253	0	0
Lane Group Flow (vph)	836	441	0	0	1379	0	0	999	385	0	0
Turn Type	Prot						Perm		Perm		
Protected Phases	7	4			8			2			
Permitted Phases							2		2		
Actuated Green, G (s)	42.0	86.0			40.0			56.0	56.0		
Effective Green, g (s)	42.0	86.0			40.0			56.0	56.0		
Actuated g/C Ratio	0.28	0.57			0.27			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)	496	2029			879			661	591		
v/s Ratio Prot	c0.47	0.12			c0.42						
v/s Ratio Perm								0.56	0.24		
v/c Ratio	1.69	0.22			1.57			1.51	0.65		
Uniform Delay, d1	54.0	15.6			55.0			47.0	38.9		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	317.1	0.1			261.7			237.9	2.6		
Delay (s)	371.1	15.7			316.7			284.9	41.5		
Level of Service	F	B			F			F	D		
Approach Delay (s)		248.4			316.7			190.0		0.0	
Approach LOS		F			F			F		A	

Intersection Summary

HCM Average Control Delay	249.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	206.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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)	122	1311	6	44	798	76	2	0	8	64	0	69
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	133	1425	7	48	867	83	2	0	9	70	0	75
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)		755										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	950			1432			2298	2739	716	1991	2701	475
vC1, stage 1 conf vol							1693	1693		1004	1004	
vC2, stage 2 conf vol							604	1046		986	1697	
vCu, unblocked vol	950			1099			2149	2684	232	1777	2638	475
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 %	82			91			97	100	99	60	100	86
cM capacity (veh/h)	719			520			87	95	636	174	81	536

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	133	950	482	48	578	372	11	70	75
Volume Left	133	0	0	48	0	0	2	70	0
Volume Right	0	0	7	0	0	83	9	0	75
cSH	719	1700	1700	520	1700	1700	280	174	536
Volume to Capacity	0.18	0.56	0.28	0.09	0.34	0.22	0.04	0.40	0.14
Queue Length 95th (ft)	17	0	0	8	0	0	3	44	12
Control Delay (s)	11.1	0.0	0.0	12.6	0.0	0.0	18.4	38.7	12.8
Lane LOS	B			B			C	E	B
Approach Delay (s)	0.9			0.6			18.4	25.3	
Approach LOS							C	D	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
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	940	1	4	1217	53	5	0	9	56	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	49	1022	1	4	1323	58	5	0	10	61	0	43
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)		755										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1380			1023			1834	2509	511	1979	2481	690
vC1, stage 1 conf vol							1120	1120		1360	1360	
vC2, stage 2 conf vol							714	1389		618	1121	
vCu, unblocked vol	1380			918			1772	2483	379	1924	2453	690
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 %	90			99			97	100	98	58	100	89
cM capacity (veh/h)	492			702			173	133	588	144	161	387

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	49	681	342	4	882	499	15	61	43
Volume Left	49	0	0	4	0	0	5	61	0
Volume Right	0	0	1	0	0	58	10	0	43
cSH	492	1700	1700	702	1700	1700	317	144	387
Volume to Capacity	0.10	0.40	0.20	0.01	0.52	0.29	0.05	0.42	0.11
Queue Length 95th (ft)	8	0	0	0	0	0	4	47	9
Control Delay (s)	13.1	0.0	0.0	10.2	0.0	0.0	16.9	47.2	15.5
Lane LOS	B			B			C	E	C
Approach Delay (s)	0.6			0.0			16.9	34.0	
Approach LOS							C	D	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	16	1238	46	206	921	134	729	821	26	26	228	268
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		6.3	6.3		6.3	6.3	
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	0.98		1.00	1.00		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	3520		1770	3472		1770	3523		1770	3253	
Flt Permitted	0.11	1.00		0.11	1.00		0.42	1.00		0.22	1.00	
Satd. Flow (perm)	203	3520		201	3472		780	3523		410	3253	
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)	17	1346	50	224	1001	146	792	892	28	28	248	291
RTOR Reduction (vph)	0	3	0	0	13	0	0	2	0	0	7	0
Lane Group Flow (vph)	17	1393	0	224	1134	0	792	918	0	28	532	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			6			8			8	
Permitted Phases	1			6			8			8		
Actuated Green, G (s)	37.1	37.1		37.1	37.1		40.7	40.7		40.7	40.7	
Effective Green, g (s)	37.1	37.1		37.1	37.1		40.7	40.7		40.7	40.7	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.45	0.45		0.45	0.45	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	84	1451		83	1431		353	1593		185	1471	
v/s Ratio Prot		0.40			0.33			0.26			0.16	
v/s Ratio Perm	0.08			c1.12			c1.02			0.07		
v/c Ratio	0.20	0.96		2.70	0.79		2.24	0.58		0.15	0.36	
Uniform Delay, d1	17.0	25.7		26.4	23.1		24.6	18.3		14.5	16.1	
Progression Factor	1.00	1.00		0.87	0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	15.4		786.4	2.4		568.7	0.8		0.8	0.3	
Delay (s)	19.4	41.1		809.3	21.6		593.3	19.1		15.3	16.5	
Level of Service	B	D		F	C		F	B		B	B	
Approach Delay (s)		40.9			150.3			284.7			16.4	
Approach LOS		D			F			F			B	

Intersection Summary

HCM Average Control Delay	150.2	HCM Level of Service	F
HCM Volume to Capacity ratio	2.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	150.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
127: Olive Ave & Golden State Blvd

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	86	959	21	213	1129	1512	879	374	49	32	511	128
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		6.3	6.3		6.3	6.3	
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	0.91		1.00	0.98		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	3528		1770	3235		1770	3478		1770	3433	
Flt Permitted	0.08	1.00		0.14	1.00		0.32	1.00		0.46	1.00	
Satd. Flow (perm)	158	3528		261	3235		597	3478		855	3433	
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)	93	1042	23	232	1227	1643	955	407	53	35	555	139
RTOR Reduction (vph)	0	1	0	0	130	0	0	9	0	0	20	0
Lane Group Flow (vph)	93	1064	0	232	2740	0	955	451	0	35	674	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			6			8			8	
Permitted Phases	1			6			8			8		
Actuated Green, G (s)	47.1	47.1		47.1	47.1		50.7	50.7		50.7	50.7	
Effective Green, g (s)	47.1	47.1		47.1	47.1		50.7	50.7		50.7	50.7	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.46	0.46		0.46	0.46	
Clearance Time (s)	5.9	5.9		5.9	5.9		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	68	1511		112	1385		275	1603		394	1582	
v/s Ratio Prot		0.30			0.85			0.13			0.20	
v/s Ratio Perm	0.59			c0.89			c1.60			0.04		
v/c Ratio	1.37	0.70		2.07	2.03dr		3.47	0.28		0.09	0.43	
Uniform Delay, d1	31.4	25.7		31.4	31.4		29.6	18.4		16.7	19.9	
Progression Factor	1.00	1.00		1.07	1.08		1.00	1.00		1.00	1.00	
Incremental Delay, d2	234.8	1.9		484.9	440.6		1121.8	0.2		0.2	0.4	
Delay (s)	266.3	27.6		518.6	474.5		1151.5	18.6		16.9	20.3	
Level of Service	F	C		F	F		F	B		B	C	
Approach Delay (s)		46.8			477.8			783.2			20.1	
Approach LOS		D			F			F			C	

Intersection Summary

HCM Average Control Delay	415.3	HCM Level of Service	F
HCM Volume to Capacity ratio	2.80		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	203.1%	ICU Level of Service	H
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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	410	1069	745	7	678	50	31	600	331	257	217	6
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	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	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	3321		1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.29	1.00		0.11	1.00	1.00	0.59	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	531	3321		201	3539	1583	1108	1863	1583	363	1863	1583
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)	446	1162	810	8	737	54	34	652	360	279	236	7
RTOR Reduction (vph)	0	96	0	0	0	28	0	0	56	0	0	4
Lane Group Flow (vph)	446	1876	0	8	737	26	34	652	304	279	236	3
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		6			1			4			4	
Permitted Phases	6			1		1	4		4	4		4
Actuated Green, G (s)	37.1	37.1		37.1	37.1	37.1	40.7	40.7	40.7	40.7	40.7	40.7
Effective Green, g (s)	37.1	37.1		37.1	37.1	37.1	40.7	40.7	40.7	40.7	40.7	40.7
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.45	0.45	0.45	0.45	0.45	0.45
Clearance Time (s)	5.9	5.9		5.9	5.9	5.9	6.3	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	219	1369		83	1459	653	501	842	716	164	842	716
v/s Ratio Prot		0.56			0.21			0.35			0.13	
v/s Ratio Perm	c0.84			0.04		0.02	0.03		0.19	c0.77		0.00
v/c Ratio	2.04	1.37		0.10	0.51	0.04	0.07	0.77	0.42	1.70	0.28	0.00
Uniform Delay, d1	26.4	26.4		16.2	19.6	15.8	13.9	20.8	16.7	24.6	15.5	13.5
Progression Factor	0.82	0.80		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	467.9	167.0		1.1	0.6	0.1	0.1	5.2	0.9	340.2	0.4	0.0
Delay (s)	489.6	188.0		17.3	20.2	15.9	14.1	26.0	17.6	364.9	15.8	13.5
Level of Service	F	F		B	C	B	B	C	B	F	B	B
Approach Delay (s)		243.6			19.9			22.7			202.4	
Approach LOS		F			B			C			F	

Intersection Summary

HCM Average Control Delay	153.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	159.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
128: Olive Ave & N Weber Ave

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	264	980	713	22	1108	64	46	541	375	1371	695	15
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	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	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	3316		1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.08	1.00	1.00	0.11	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	174	3316		158	3539	1583	197	1863	1583	459	1863	1583
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)	287	1065	775	24	1204	70	50	588	408	1490	755	16
RTOR Reduction (vph)	0	118	0	0	0	18	0	0	13	0	0	5
Lane Group Flow (vph)	287	1722	0	24	1204	52	50	588	395	1490	755	11
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		6			1			4			4	
Permitted Phases	6			1		1	4		4	4		4
Actuated Green, G (s)	47.1	47.1		47.1	47.1	47.1	50.7	50.7	50.7	50.7	50.7	50.7
Effective Green, g (s)	47.1	47.1		47.1	47.1	47.1	50.7	50.7	50.7	50.7	50.7	50.7
Actuated g/C Ratio	0.43	0.43		0.43	0.43	0.43	0.46	0.46	0.46	0.46	0.46	0.46
Clearance Time (s)	5.9	5.9		5.9	5.9	5.9	6.3	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	75	1420		68	1515	678	91	859	730	212	859	730
v/s Ratio Prot		0.52			0.34			0.32			0.41	
v/s Ratio Perm	c1.65			0.15		0.03	0.25		0.25	c3.25		0.01
v/c Ratio	3.83	1.21		0.35	0.79	0.08	0.55	0.68	0.54	7.03	0.88	0.02
Uniform Delay, d1	31.4	31.4		21.2	27.3	18.6	21.4	23.4	21.3	29.6	26.9	16.1
Progression Factor	0.93	0.92		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1274.9	96.4		6.5	3.4	0.1	11.4	2.9	1.4	2722.6	10.9	0.0
Delay (s)	1304.2	125.3		27.7	30.7	18.7	32.8	26.3	22.7	2752.2	37.8	16.1
Level of Service	F	F		C	C	B	C	C	C	F	D	B
Approach Delay (s)		284.4			30.0			25.2			1826.5	
Approach LOS		F			C			C			F	

Intersection Summary

HCM Average Control Delay	713.0	HCM Level of Service	F
HCM Volume to Capacity ratio	5.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	200.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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	1147	645	251	479	0	381	18	110	10	0	20
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		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	0.92
Hourly flow rate (vph)	0	1247	701	273	521	0	414	20	120	11	0	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	521			1948			1711	3014	260	2413	2664	974
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	521			1948			1711	3014	260	2413	2664	974
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			8			0	0	84	0	100	91
cM capacity (veh/h)	1042			297			10	1	738	0	2	251

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	831	1117	446	347	553	33
Volume Left	0	0	273	0	414	11
Volume Right	0	701	0	0	120	22
cSH	1700	1700	297	1700	9	0
Volume to Capacity	0.49	0.66	0.92	0.20	58.42	Err
Queue Length 95th (ft)	0	0	218	0	Err	Err
Control Delay (s)	0.0	0.0	72.2	0.0	Err	Err
Lane LOS			F		F	F
Approach Delay (s)	0.0		40.6		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	118.4%	ICU Level of Service	H
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	729	400	416	1961	0	170	7	250	17	0	16
Sign Control		Free			Free			Stop		Stop		
Grade		0%			0%			0%		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	0.92
Hourly flow rate (vph)	0	792	435	452	2132	0	185	8	272	18	0	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)												
pX, platoon unblocked												
vC, conflicting volume	2132			1227			3449	4263	1066	2984	4046	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2132			1227			3449	4263	1066	2984	4046	614
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			20			0	0	0	0	100	96
cM capacity (veh/h)	251			564			1	0	218	0	1	435

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	528	699	1163	1421	464	36
Volume Left	0	0	452	0	185	18
Volume Right	0	435	0	0	272	17
cSH	1700	1700	564	1700	2	0
Volume to Capacity	0.31	0.41	0.80	0.84	243.63	Err
Queue Length 95th (ft)	0	0	195	0	Err	Err
Control Delay (s)	0.0	0.0	32.3	0.0	Err	Err
Lane LOS			D		F	F
Approach Delay (s)	0.0		14.6		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	141.1%	ICU Level of Service	H
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)	216	1296	0	0	524	163	216	0	398	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		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)	235	1409	0	0	570	177	235	0	433	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	747			1409			2163	2625	704	1832	2536
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	747			1409			2163	2625	704	1832	2536
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 %	73			100			0	100	0	0	100
cM capacity (veh/h)	857			480			21	17	379	0	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	704	939	380	367	235	433
Volume Left	235	0	0	0	235	0
Volume Right	0	0	0	177	0	433
cSH	857	1700	1700	1700	21	379
Volume to Capacity	0.27	0.55	0.22	0.22	11.23	1.14
Queue Length 95th (ft)	28	0	0	0	Err	413
Control Delay (s)	6.3	0.0	0.0	0.0	Err	122.8
Lane LOS	A				F	F
Approach Delay (s)	2.7		0.0		3597.2	
Approach LOS					F	

Intersection Summary			
Average Delay	786.6		
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
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)	445	459	0	0	1078	766	1292	0	560	0	0
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		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)	484	499	0	0	1172	833	1404	0	609	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	2004			499			2052	3471	249	2805	3054
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	2004			499			2052	3471	249	2805	3054
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 %	0			100			0	0	19	0	0
cM capacity (veh/h)	282			1061			0	0	750	0	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	650	333	781	1223	1404	609
Volume Left	484	0	0	0	1404	0
Volume Right	0	0	0	833	0	609
cSH	282	1700	1700	1700	0	750
Volume to Capacity	1.72	0.20	0.46	0.72	Err	0.81
Queue Length 95th (ft)	777	0	0	0	Err	216
Control Delay (s)	368.2	0.0	0.0	0.0	Err	26.9
Lane LOS	F				F	D
Approach Delay (s)	243.6		0.0		Err	
Approach LOS					F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	161.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBT	EBR	WBT	WBR	WBR2	SBL2	NWL	NWT	NWR2
Lane Configurations									
Volume (vph)	1769	267	949	205	1	12	152	262	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		1.00		0.95	
Frt	1.00	0.85	1.00	0.85		1.00		0.95	
Flt Protected	1.00	1.00	1.00	1.00		0.95		0.99	
Satd. Flow (prot)	1863	1583	1863	1583		1770		3322	
Flt Permitted	1.00	1.00	1.00	1.00		0.95		0.99	
Satd. Flow (perm)	1863	1583	1863	1583		1770		3322	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1923	290	1032	223	1	13	165	285	225
RTOR Reduction (vph)	0	40	0	0	0	0	0	29	0
Lane Group Flow (vph)	1923	250	1032	224	0	13	0	646	0
Turn Type		Perm		Perm		custom	Prot		
Protected Phases	4		4				2		
Permitted Phases		4		4		2		2	
Actuated Green, G (s)	113.8	113.8	113.8	113.8		27.1		27.1	
Effective Green, g (s)	113.8	113.8	113.8	113.8		27.1		27.1	
Actuated g/C Ratio	0.76	0.76	0.76	0.76		0.18		0.18	
Clearance Time (s)	4.2	4.2	4.2	4.2		4.9		4.9	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2		0.2	
Lane Grp Cap (vph)	1413	1201	1413	1201		320		600	
v/s Ratio Prot	c1.03		0.55						
v/s Ratio Perm		0.16		0.14		0.01		c0.19	
v/c Ratio	1.36	0.21	0.73	0.19		0.04		1.08	
Uniform Delay, d1	18.1	5.2	9.8	5.1		50.7		61.4	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	
Incremental Delay, d2	167.1	0.0	1.7	0.0		0.0		58.8	
Delay (s)	185.2	5.2	11.5	5.1		50.7		120.3	
Level of Service	F	A	B	A		D		F	
Approach Delay (s)	161.6		10.4					120.3	
Approach LOS	F		B					F	

Intersection Summary

HCM Average Control Delay	108.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	127.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBT	WBR	WBR2	SBL2	NWL	NWT	NWR2
Lane Configurations									
Volume (vph)	1389	314	1621	774	32	13	316	1683	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		1.00		0.95	
Frt	1.00	0.85	1.00	0.85		1.00		1.00	
Flt Protected	1.00	1.00	1.00	1.00		0.95		0.99	
Satd. Flow (prot)	1863	1583	1863	1583		1770		3506	
Flt Permitted	1.00	1.00	1.00	1.00		0.95		0.99	
Satd. Flow (perm)	1863	1583	1863	1583		1770		3506	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1510	341	1762	841	35	14	343	1829	24
RTOR Reduction (vph)	0	60	0	1	0	0	0	1	0
Lane Group Flow (vph)	1510	281	1762	875	0	14	0	2195	0
Turn Type		Perm		Perm		custom	Prot		
Protected Phases	4		4				2		
Permitted Phases		4		4		2		2	
Actuated Green, G (s)	81.8	81.8	81.8	81.8		59.1		59.1	
Effective Green, g (s)	81.8	81.8	81.8	81.8		59.1		59.1	
Actuated g/C Ratio	0.55	0.55	0.55	0.55		0.39		0.39	
Clearance Time (s)	4.2	4.2	4.2	4.2		4.9		4.9	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2		0.2	
Lane Grp Cap (vph)	1016	863	1016	863		697		1381	
v/s Ratio Prot	0.81		c0.95						
v/s Ratio Perm		0.18		0.55		0.01		c0.63	
v/c Ratio	1.49	0.33	1.73	1.01		0.02		1.59	
Uniform Delay, d1	34.1	18.9	34.1	34.1		27.8		45.4	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	
Incremental Delay, d2	224.1	0.1	334.5	34.2		0.0		268.8	
Delay (s)	258.2	18.9	368.6	68.3		27.8		314.3	
Level of Service	F	B	F	E		C		F	
Approach Delay (s)	214.1		268.9					314.3	
Approach LOS	F		F					F	

Intersection Summary

HCM Average Control Delay	268.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	156.0%	ICU Level of Service	H
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)	451	1069	820	8	678	55	283	217	7	34	600	364
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	0.99			1.00			0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1842			1809			1768	
Flt Permitted	0.22	1.00	1.00	0.22	1.00			0.25			0.97	
Satd. Flow (perm)	414	1863	1583	414	1842			460			1725	
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)	490	1162	891	9	737	60	308	236	8	37	652	396
RTOR Reduction (vph)	0	0	86	0	7	0	0	1	0	0	46	0
Lane Group Flow (vph)	490	1162	805	9	790	0	0	551	0	0	1039	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)	18.0	18.0	18.0	18.0	18.0			19.0			19.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			19.0			19.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40			0.42			0.42	
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)	166	745	633	166	737			194			728	
v/s Ratio Prot		0.62			0.43							
v/s Ratio Perm	c1.18		0.51	0.02				c1.20			0.60	
v/c Ratio	2.95	1.56	1.27	0.05	1.07			2.84			1.43	
Uniform Delay, d1	13.5	13.5	13.5	8.3	13.5			13.0			13.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	894.4	258.4	134.5	0.1	54.3			841.8			200.0	
Delay (s)	907.9	271.9	148.0	8.4	67.8			854.8			213.0	
Level of Service	F	F	F	A	E			F			F	
Approach Delay (s)		351.1			67.1			854.8			213.0	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	330.9	HCM Level of Service	F
HCM Volume to Capacity ratio	2.90		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	160.5%	ICU Level of Service	H
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)	290	980	784	24	1108	70	1508	695	17	51	541	413
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	0.99			1.00			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1846			1800			1755	
Flt Permitted	0.24	1.00	1.00	0.24	1.00			0.24			0.98	
Satd. Flow (perm)	438	1863	1583	438	1846			440			1731	
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)	315	1065	852	26	1204	76	1639	755	18	55	588	449
RTOR Reduction (vph)	0	0	120	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	315	1065	732	26	1275	0	0	2411	0	0	1084	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)	17.0	17.0	17.0	17.0	17.0			20.0			20.0	
Effective Green, g (s)	17.0	17.0	17.0	17.0	17.0			20.0			20.0	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38			0.44			0.44	
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)	165	704	598	165	697			196			769	
v/s Ratio Prot		0.57			0.69							
v/s Ratio Perm	c0.72		0.46	0.06				c5.48			0.63	
v/c Ratio	1.91	1.51	1.22	0.16	1.83			12.30			1.41	
Uniform Delay, d1	14.0	14.0	14.0	9.3	14.0			12.5			12.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	430.8	238.1	115.2	0.4	378.8			5096.5			192.2	
Delay (s)	444.8	252.1	129.2	9.7	392.8			5109.0			204.7	
Level of Service	F	F	F	A	F			F			F	
Approach Delay (s)		232.4			385.2			5109.0			204.7	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	1926.7	HCM Level of Service	F
HCM Volume to Capacity ratio	7.54		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	269.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HANFORD NO-BUILD CONDITIONS SYNCHRO OUTPUT

HCM Unsignalized Intersection Capacity Analysis
1: SR 198 & 9 th Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	689	26	116	879	28	0	0	47	0	0	565
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	52	749	28	126	955	30	0	0	51	0	0	614
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	986			777			2211	2105	389	1753	2104	493
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	986			777			2211	2105	389	1753	2104	493
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			85			0	100	92	100	100	0
cM capacity (veh/h)	696			835			0	40	610	42	40	522

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	52	499	278	126	637	349	51	614
Volume Left	52	0	0	126	0	0	0	0
Volume Right	0	0	28	0	0	30	51	614
cSH	696	1700	1700	835	1700	1700	610	522
Volume to Capacity	0.07	0.29	0.16	0.15	0.37	0.21	0.08	1.18
Queue Length 95th (ft)	6	0	0	13	0	0	7	550
Control Delay (s)	10.6	0.0	0.0	10.1	0.0	0.0	11.4	124.2
Lane LOS	B			B			B	F
Approach Delay (s)	0.7			1.1			11.4	124.2
Approach LOS							B	F

Intersection Summary			
Average Delay	30.2		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: SR 198 & 9 th Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	838	960	33	38	944	59	0	0	314	0	0	95
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	911	1043	36	41	1026	64	0	0	341	0	0	103
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	1090			1079			3582	4056	540	3826	4042	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1090			1079			3582	4056	540	3826	4042	545
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 %	0			94			0	0	30	0	0	79
cM capacity (veh/h)	636			642			0	0	486	0	0	482

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	911	696	384	41	684	406	341	103
Volume Left	911	0	0	41	0	0	0	0
Volume Right	0	0	36	0	0	64	341	103
cSH	636	1700	1700	642	1700	1700	486	482
Volume to Capacity	1.43	0.41	0.23	0.06	0.40	0.24	0.70	0.21
Queue Length 95th (ft)	1061	0	0	5	0	0	136	20
Control Delay (s)	222.6	0.0	0.0	11.0	0.0	0.0	28.0	14.5
Lane LOS	F			B			D	B
Approach Delay (s)	101.9			0.4			28.0	14.5
Approach LOS							D	B

Intersection Summary			
Average Delay	60.1		
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: SR 198 WB off ramp & SR 198 WB on ramp

10/12/2010

Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (veh/h)	40	0	83	0	191	0	0	551	74	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		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)	43	0	90	0	208	0	0	599	80	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	847	887	208	679			208			892	847
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	847	887	208	679			208			892	847
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 %	85	100	89	100			100			100	100
cM capacity (veh/h)	282	283	833	913			1363			234	299

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	134	208	679
Volume Left	43	0	0
Volume Right	90	0	80
cSH	867	1700	1700
Volume to Capacity	0.15	0.12	0.40
Queue Length 95th (ft)	14	0	0
Control Delay (s)	13.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.2	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: SR 198 WB off ramp & SR 198 WB on ramp

10/12/2010

Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (veh/h)	48	0	182	0	710	0	0	251	67	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		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)	52	0	198	0	772	0	0	273	73	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	1081	1117	772	346			772			1180	1081
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1081	1117	772	346			772			1180	1081
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 %	73	100	50	100			100			100	100
cM capacity (veh/h)	195	207	400	1213			843			84	218

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	250	772	346
Volume Left	52	0	0
Volume Right	198	0	73
cSH	505	1700	1700
Volume to Capacity	0.50	0.45	0.20
Queue Length 95th (ft)	68	0	0
Control Delay (s)	24.1	0.0	0.0
Lane LOS	C		
Approach Delay (s)	24.1	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 198 EB off ramp & SR 198 EB on ramp

10/12/2010

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (veh/h)	43	0	228	0	255	35	0	566	0	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		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)	47	0	248	0	277	38	0	615	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	911	930	615	615			315			1035	911
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	911	930	615	615			315			1035	911
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 %	82	100	50	100			100			100	100
cM capacity (veh/h)	255	267	491	964			1245			104	274

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	295	315	615
Volume Left	47	0	0
Volume Right	248	38	0
cSH	584	1700	1700
Volume to Capacity	0.50	0.19	0.36
Queue Length 95th (ft)	71	0	0
Control Delay (s)	20.0	0.0	0.0
Lane LOS	C		
Approach Delay (s)	20.0	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 198 EB off ramp & SR 198 EB on ramp

10/12/2010

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (veh/h)	77	0	213	0	814	109	0	272	0	0	0
Sign Control		Stop			Free			Free		Yield	
Grade		0%			0%			0%		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)	84	0	232	0	885	118	0	296	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	1240	1299	296	296			1003			1355	1240
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1240	1299	296	296			1003			1355	1240
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 %	45	100	69	100			100			100	100
cM capacity (veh/h)	152	161	744	1266			690			87	175

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	315	1003	296
Volume Left	84	0	0
Volume Right	232	118	0
cSH	469	1700	1700
Volume to Capacity	0.67	0.59	0.17
Queue Length 95th (ft)	122	0	0
Control Delay (s)	27.0	0.0	0.0
Lane LOS	D		
Approach Delay (s)	27.0	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: SR 198 & 7th Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	95	545	6	47	771	11	4	12	17	79	14	96
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	103	592	7	51	838	12	4	13	18	86	15	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	850			599			1435	1754	299	1474	1752	425
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	850			599			1435	1754	299	1474	1752	425
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 %	87			95			92	81	97	0	78	82
cM capacity (veh/h)	784			974			56	69	697	64	70	578

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	103	395	204	51	559	291	36	205
Volume Left	103	0	0	51	0	0	4	86
Volume Right	0	0	7	0	0	12	18	104
cSH	784	1700	1700	974	1700	1700	123	118
Volume to Capacity	0.13	0.23	0.12	0.05	0.33	0.17	0.29	1.75
Queue Length 95th (ft)	11	0	0	4	0	0	28	396
Control Delay (s)	10.3	0.0	0.0	8.9	0.0	0.0	46.1	432.5
Lane LOS	B			A			E	F
Approach Delay (s)	1.5			0.5			46.1	432.5
Approach LOS							E	F

Intersection Summary			
Average Delay	49.9		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: SR 198 & 7th Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	975	11	18	1033	9	46	155	67	16	7	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	55	1060	12	20	1123	10	50	168	73	17	8	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	1133			1072			1802	2348	536	1965	2349	566
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1133			1072			1802	2348	536	1965	2349	566
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			97			0	0	85	0	76	96
cM capacity (veh/h)	613			646			35	31	489	0	31	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	55	707	365	20	749	384	291	46
Volume Left	55	0	0	20	0	0	50	17
Volume Right	0	0	12	0	0	10	73	21
cSH	613	1700	1700	646	1700	1700	42	0
Volume to Capacity	0.09	0.42	0.21	0.03	0.44	0.23	6.93	Err
Queue Length 95th (ft)	7	0	0	2	0	0	Err	Err
Control Delay (s)	11.5	0.0	0.0	10.7	0.0	0.0	Err	Err
Lane LOS	B			B			F	F
Approach Delay (s)	0.6			0.2			Err	Err
Approach LOS							F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	58.2%	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)	86	533	13	4	738	4	11	5	6	4	8	84
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	93	579	14	4	802	4	12	5	7	4	9	91
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	807			593			1279	1589	297	1299	1593	403
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	807			593			1279	1589	297	1299	1593	403
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 %	89			100			86	94	99	96	91	85
cM capacity (veh/h)	814			979			88	94	700	102	93	597

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	93	386	207	4	535	272	24	104
Volume Left	93	0	0	4	0	0	12	4
Volume Right	0	0	14	0	0	4	7	91
cSH	814	1700	1700	979	1700	1700	118	362
Volume to Capacity	0.11	0.23	0.12	0.00	0.31	0.16	0.20	0.29
Queue Length 95th (ft)	10	0	0	0	0	0	18	29
Control Delay (s)	10.0	0.0	0.0	8.7	0.0	0.0	43.1	18.9
Lane LOS	A			A			E	C
Approach Delay (s)	1.4			0.0			43.1	18.9
Approach LOS							E	C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: SR 198 & 6th St

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	99	944	8	3	950	10	0	42	23	2	3	103
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	108	1026	9	3	1033	11	0	46	25	2	3	112
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	1043			1035			1882	2296	517	1821	2295	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1043			1035			1882	2296	517	1821	2295	522
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 %	84			100			100	0	95	0	90	78
cM capacity (veh/h)	662			667			27	32	503	0	32	500

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	108	684	351	3	688	355	71	117
Volume Left	108	0	0	3	0	0	0	2
Volume Right	0	0	9	0	0	11	25	112
cSH	662	1700	1700	667	1700	1700	48	0
Volume to Capacity	0.16	0.40	0.21	0.00	0.40	0.21	1.48	Err
Queue Length 95th (ft)	14	0	0	0	0	0	169	Err
Control Delay (s)	11.5	0.0	0.0	10.4	0.0	0.0	434.9	Err
Lane LOS	B			B			F	F
Approach Delay (s)	1.1			0.0			434.9	Err
Approach LOS							F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: SR 198 & 2nd Ave.

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	518	14	114	731	4	3	6	44	2	7	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	4	563	15	124	795	4	3	7	48	2	8	18
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	799			578			1247	1626	289	1386	1632	399
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	799			578			1247	1626	289	1386	1632	399
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			88			97	93	93	97	91	97
cM capacity (veh/h)	819			991			106	88	707	81	87	600

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	375	203	124	530	269	58	28
Volume Left	4	0	0	124	0	0	3	2
Volume Right	0	0	15	0	0	4	48	18
cSH	819	1700	1700	991	1700	1700	334	196
Volume to Capacity	0.01	0.22	0.12	0.12	0.31	0.16	0.17	0.14
Queue Length 95th (ft)	0	0	0	11	0	0	15	12
Control Delay (s)	9.4	0.0	0.0	9.1	0.0	0.0	18.0	26.5
Lane LOS	A			A			C	D
Approach Delay (s)	0.1			1.2			18.0	26.5
Approach LOS							C	D

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	37.6%	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)	20	945	17	45	891	8	10	8	132	3	13	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	22	1027	18	49	968	9	11	9	143	3	14	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)												
pX, platoon unblocked												
vC, conflicting volume	977			1046			1686	2155	523	1776	2160	489
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	977			1046			1686	2155	523	1776	2160	489
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 %	97			93			73	79	71	89	66	97
cM capacity (veh/h)	702			661			40	42	499	29	42	525

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	22	685	361	49	646	332	163	35
Volume Left	22	0	0	49	0	0	11	3
Volume Right	0	0	18	0	0	9	143	17
cSH	702	1700	1700	661	1700	1700	214	72
Volume to Capacity	0.03	0.40	0.21	0.07	0.38	0.20	0.76	0.48
Queue Length 95th (ft)	2	0	0	6	0	0	131	49
Control Delay (s)	10.3	0.0	0.0	10.9	0.0	0.0	61.1	94.4
Lane LOS	B			B			F	F
Approach Delay (s)	0.2			0.5			61.1	94.4
Approach LOS							F	F

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Lacey Blvd. & 8th Ave

10/12/2010

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	231	43	55	513	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	15	8	72	48	12	22	71	251	47	60	558	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)												
pX, platoon unblocked												
vC, conflicting volume	1105	1124	565	1097	1108	274	573			298		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1105	1124	565	1097	1108	274	573			298		
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	86	67	94	97	93			95		
cM capacity (veh/h)	159	182	524	145	186	764	1000			1263		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	95	82	71	298	60	573
Volume Left	15	48	71	0	60	0
Volume Right	72	22	0	47	0	15
cSH	344	193	1000	1700	1263	1700
Volume to Capacity	0.27	0.42	0.07	0.18	0.05	0.34
Queue Length 95th (ft)	27	48	6	0	4	0
Control Delay (s)	19.4	36.6	8.9	0.0	8.0	0.0
Lane LOS	C	E	A		A	
Approach Delay (s)	19.4	36.6	1.7		0.8	
Approach LOS	C	E				

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Lacey Blvd & 8th Ave

10/12/2010

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	782	69	15	240	38
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	28	12	77	29	11	42	104	850	75	16	261	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	1421	1448	282	1396	1431	888	302			925		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1421	1448	282	1396	1431	888	302			925		
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 %	67	90	90	68	91	88	92			98		
cM capacity (veh/h)	86	118	757	91	121	343	1259			739		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	117	83	104	925	16	302
Volume Left	28	29	104	0	16	0
Volume Right	77	42	0	75	0	41
cSH	220	154	1259	1700	739	1700
Volume to Capacity	0.53	0.54	0.08	0.54	0.02	0.18
Queue Length 95th (ft)	70	67	7	0	2	0
Control Delay (s)	38.6	52.8	8.1	0.0	10.0	0.0
Lane LOS	E	F	A		A	
Approach Delay (s)	38.6	52.8	0.8		0.5	
Approach LOS	E	F				

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	66.1%	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 (vph)	9	153	90	77	69	27	39	178	43	102	469	6
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	0.94		1.00	0.96		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	1759		1770	1785		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	1759		1770	1785		1770	1808		1770	1859	
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	166	98	84	75	29	42	193	47	111	510	7
RTOR Reduction (vph)	0	22	0	0	13	0	0	10	0	0	1	0
Lane Group Flow (vph)	10	242	0	84	91	0	42	230	0	111	516	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	16.3		6.9	22.1		4.1	21.0		7.7	24.6	
Effective Green, g (s)	1.1	16.3		6.9	22.1		4.1	21.0		7.7	24.6	
Actuated g/C Ratio	0.02	0.24		0.10	0.33		0.06	0.31		0.11	0.36	
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	422		180	581		107	559		201	674	
v/s Ratio Prot	0.01	c0.14		c0.05	0.05		0.02	0.13		c0.06	c0.28	
v/s Ratio Perm												
v/c Ratio	0.34	0.57		0.47	0.16		0.39	0.41		0.55	0.77	
Uniform Delay, d1	33.0	22.7		28.8	16.3		30.7	18.6		28.5	19.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0	1.9		1.9	0.1		2.4	0.5		3.3	5.2	
Delay (s)	40.1	24.6		30.7	16.4		33.1	19.1		31.7	24.3	
Level of Service	D	C		C	B		C	B		C	C	
Approach Delay (s)		25.2			22.8			21.1			25.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	16.0
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)	12	73	37	67	164	103	113	706	52	36	212	14
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	0.94		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	1769		1770	1755		1770	1843		1770	1846	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1769		1770	1755		1770	1843		1770	1846	
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)	13	79	40	73	178	112	123	767	57	39	230	15
RTOR Reduction (vph)	0	16	0	0	18	0	0	2	0	0	2	0
Lane Group Flow (vph)	13	103	0	73	272	0	123	822	0	39	243	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	1.3	15.1		7.6	21.4		11.2	46.9		4.7	40.4	
Effective Green, g (s)	1.3	15.1		7.6	21.4		11.2	46.9		4.7	40.4	
Actuated g/C Ratio	0.01	0.17		0.08	0.24		0.12	0.52		0.05	0.45	
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)	25	296		149	416		220	957		92	826	
v/s Ratio Prot	0.01	0.06		c0.04	c0.15		c0.07	c0.45		0.02	0.13	
v/s Ratio Perm												
v/c Ratio	0.52	0.35		0.49	0.65		0.56	0.86		0.42	0.29	
Uniform Delay, d1	44.2	33.3		39.5	31.1		37.2	18.8		41.5	15.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.1	0.7		2.5	3.7		3.1	7.8		3.1	0.2	
Delay (s)	62.3	34.0		42.0	34.8		40.3	26.6		44.6	16.1	
Level of Service	E	C		D	C		D	C		D	B	
Approach Delay (s)		36.8			36.2			28.4			20.0	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HANFORD WEST NO-BUILD 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	143	17	58	73	55	17	98	27	57	147	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	30	155	18	63	79	60	18	107	29	62	160	38
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	139			174			579	491	165	543	470	109
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139			174			579	491	165	543	470	109
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			96			94	76	97	82	65	96
cM capacity (veh/h)	1444			1403			285	447	880	338	459	944

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	204	202	154	260
Volume Left	30	63	18	62
Volume Right	18	60	29	38
cSH	1444	1403	459	455
Volume to Capacity	0.02	0.04	0.34	0.57
Queue Length 95th (ft)	2	4	37	87
Control Delay (s)	1.3	2.7	16.8	22.9
Lane LOS	A	A	C	C
Approach Delay (s)	1.3	2.7	16.8	22.9
Approach LOS			C	C

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	48.9%	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	186	29	35	194	73	32	182	19	107	112	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	17	202	32	38	211	79	35	198	21	116	122	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	290			234			661	619	218	699	595	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290			234			661	619	218	699	595	251
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			97			87	49	97	42	70	97
cM capacity (veh/h)	1272			1334			271	388	822	201	400	788

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	251	328	253	259
Volume Left	17	38	35	116
Volume Right	32	79	21	21
cSH	1272	1334	382	284
Volume to Capacity	0.01	0.03	0.66	0.91
Queue Length 95th (ft)	1	2	115	210
Control Delay (s)	0.7	1.1	31.2	72.3
Lane LOS	A	A	D	F
Approach Delay (s)	0.7	1.1	31.2	72.3
Approach LOS			D	F

Intersection Summary			
Average Delay	24.9		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
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	26	136	0	0	160	54
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	63	1	40	28	148	0	0	174	59
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	428	408	203	408	437	148	233			148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428	408	203	408	437	148	233			148		
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	88	100	96	98			100		
cM capacity (veh/h)	504	522	837	545	502	899	1335			1434		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	104	176	233
Volume Left	63	28	0
Volume Right	40	0	59
cSH	886	1335	1700
Volume to Capacity	0.12	0.02	0.14
Queue Length 95th (ft)	10	2	0
Control Delay (s)	11.2	1.4	0.0
Lane LOS	B	A	
Approach Delay (s)	11.2	1.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	33.6%	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	210	0	0	174	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	97	2	87	28	228	0	0	189	57
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	547	502	217	502	530	228	246			228		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	547	502	217	502	530	228	246			228		
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	79	100	89	98			100		
cM capacity (veh/h)	392	461	822	472	445	811	1320			1340		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	186	257	246
Volume Left	97	28	0
Volume Right	87	0	57
cSH	885	1320	1700
Volume to Capacity	0.21	0.02	0.14
Queue Length 95th (ft)	20	2	0
Control Delay (s)	12.5	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	12.5	1.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 198 EB Off-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)	41	0	20	0	0	0	0	117	98	73	137	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	45	0	22	0	0	0	0	127	107	79	149	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	488	541	149	499	488	180	149			234		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488	541	149	499	488	180	149			234		
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	100	98	100	100	100	100			94		
cM capacity (veh/h)	468	421	898	449	452	862	1433			1334		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	66	234	228
Volume Left	45	0	79
Volume Right	22	107	0
cSH	696	1700	1334
Volume to Capacity	0.10	0.14	0.06
Queue Length 95th (ft)	8	0	5
Control Delay (s)	12.1	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	3.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 198 EB Off-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)	84	0	39	0	0	0	0	173	88	65	231	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	91	0	42	0	0	0	0	188	96	71	251	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	628	676	251	649	628	236	251			284		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628	676	251	649	628	236	251			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 %	76	100	95	100	100	100	100			94		
cM capacity (veh/h)	379	354	788	347	377	803	1314			1279		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	134	284	322
Volume Left	91	0	71
Volume Right	42	96	0
cSH	554	1700	1279
Volume to Capacity	0.24	0.17	0.06
Queue Length 95th (ft)	23	0	4
Control Delay (s)	15.1	0.0	2.2
Lane LOS	C		A
Approach Delay (s)	15.1	0.0	2.2
Approach LOS	C		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: W Lacey Blvd & 13th Avenue

6/18/2012

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	16	54	91	47	12	187	58	51	185	10
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	0.92
Hourly flow rate (vph)	36	271	17	59	99	51	13	203	63	55	201	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	324	209	279	267
Volume Left (vph)	36	59	13	55
Volume Right (vph)	17	51	63	11
Hadj (s)	0.02	-0.06	-0.09	0.05
Departure Headway (s)	6.1	6.3	6.1	6.3
Degree Utilization, x	0.55	0.37	0.47	0.46
Capacity (veh/h)	538	500	538	516
Control Delay (s)	16.3	12.9	14.4	14.6
Approach Delay (s)	16.3	12.9	14.4	14.6
Approach LOS	C	B	B	B

Intersection Summary			
Delay	14.7		
HCM Level of Service	B		
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: W Lacey Blvd & 13th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	15	205	18	83	314	43	21	309	107	29	158	15
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	0.92
Hourly flow rate (vph)	16	223	20	90	341	47	23	336	116	32	172	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	259	478	475	220
Volume Left (vph)	16	90	23	32
Volume Right (vph)	20	47	116	16
Hadj (s)	0.00	0.01	-0.10	0.02
Departure Headway (s)	8.3	7.7	7.5	8.5
Degree Utilization, x	0.60	1.02	0.98	0.52
Capacity (veh/h)	421	465	475	402
Control Delay (s)	23.0	75.2	64.3	20.4
Approach Delay (s)	23.0	75.2	64.3	20.4
Approach LOS	C	F	F	C

Intersection Summary			
Delay	53.7		
HCM Level of Service	F		
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	64	24	22	207	338	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	26	24	225	367	40
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	660	388	408			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660	388	408			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	96	98			
cM capacity (veh/h)	419	661	1151			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	96	249	408
Volume Left	70	24	0
Volume Right	26	0	40
cSH	465	1151	1700
Volume to Capacity	0.21	0.02	0.24
Queue Length 95th (ft)	19	2	0
Control Delay (s)	14.7	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	14.7	1.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Font St & 13th Avenue

6/18/2012

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	64	23	70	558	244	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	25	76	607	265	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)				1082		
pX, platoon unblocked	0.91					
vC, conflicting volume	1049	291	316			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1006	291	316			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	97	94			
cM capacity (veh/h)	229	748	1244			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	95	683	316
Volume Left	70	76	0
Volume Right	25	0	51
cSH	280	1244	1700
Volume to Capacity	0.34	0.06	0.19
Queue Length 95th (ft)	36	5	0
Control Delay (s)	24.3	1.6	0.0
Lane LOS	C	A	
Approach Delay (s)	24.3	1.6	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	19	18	212	15	18	322
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	20	230	16	20	350
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						
vC, conflicting volume	628	239			247	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	628	239			247	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			99	
cM capacity (veh/h)	440	800			1319	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	40	247	370
Volume Left	21	0	20
Volume Right	20	16	0
cSH	564	1700	1319
Volume to Capacity	0.07	0.15	0.01
Queue Length 95th (ft)	6	0	1
Control Delay (s)	11.9	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	0.5
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: 13th Road & 13th Avenue

6/18/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	76	98	506	53	33	259
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	107	550	58	36	282
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	0.83	0.83			0.83	
vC, conflicting volume	932	579			608	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	817	391			426	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	80			96	
cM capacity (veh/h)	277	546			942	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	189	608	317
Volume Left	83	0	36
Volume Right	107	58	0
cSH	383	1700	942
Volume to Capacity	0.49	0.36	0.04
Queue Length 95th (ft)	66	0	3
Control Delay (s)	23.2	0.0	1.4
Lane LOS	C		A
Approach Delay (s)	23.2	0.0	1.4
Approach LOS	C		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBL2	NBL	NBT	SBT	SBR
Lane Configurations												
Volume (vph)	42	0	163	8	33	33	63	186	17	128	72	241
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				0.93		1.00		1.00	0.89	
Flt Protected		0.99				0.99		0.95		0.99	1.00	
Satd. Flow (prot)		1645				1719		1681		1749	1660	
Flt Permitted		0.99				0.99		0.95		0.64	1.00	
Satd. Flow (perm)		1645				1719		1681		1129	1660	
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)	46	0	177	9	36	36	68	202	18	139	78	262
RTOR Reduction (vph)	0	2	0	0	0	47	0	0	0	0	8	0
Lane Group Flow (vph)	0	230	0	0	0	93	0	178	0	181	398	0
Turn Type	Split				Split			Prot	Perm			
Protected Phases	4	4			3	3		5		2	6	
Permitted Phases									2			
Actuated Green, G (s)		13.9				7.7		10.0		36.7	22.7	
Effective Green, g (s)		13.9				7.7		10.0		36.7	22.7	
Actuated g/C Ratio		0.20				0.11		0.14		0.52	0.32	
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)		325				188		239		589	536	
v/s Ratio Prot		c0.14				c0.05		c0.11			c0.24	
v/s Ratio Perm										0.16		
v/c Ratio		0.71				0.49		0.74		0.31	0.74	
Uniform Delay, d1		26.3				29.5		28.9		9.6	21.2	
Progression Factor		1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2		6.9				2.0		11.9		1.3	9.0	
Delay (s)		33.2				31.5		40.8		10.9	30.2	
Level of Service		C				C		D		B	C	
Approach Delay (s)		33.2				31.5				25.7	30.2	
Approach LOS		C				C				C	C	

Intersection Summary

HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2
Lane Configurations	
Volume (vph)	61
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)	66
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	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBL2	NBL	NBT	SBT	SBR
Lane Configurations												
Volume (vph)	40	0	207	24	53	53	99	150	146	422	94	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	4.0	
Lane Util. Factor		1.00				1.00		0.95		0.95	1.00	
Frt		0.88				0.93		1.00		1.00	0.91	
Flt Protected		0.99				0.99		0.95		0.99	1.00	
Satd. Flow (prot)		1636				1719		1681		1746	1692	
Flt Permitted		0.99				0.99		0.95		0.53	1.00	
Satd. Flow (perm)		1636				1719		1681		945	1692	
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)	43	0	225	26	58	58	108	163	159	459	102	127
RTOR Reduction (vph)	0	3	0	0	0	22	0	0	0	0	9	0
Lane Group Flow (vph)	0	291	0	0	0	202	0	147	0	634	309	0
Turn Type	Split				Split			Prot	Perm			
Protected Phases	4	4			3	3		5		2	6	
Permitted Phases									2			
Actuated Green, G (s)		24.0				16.0		17.7		98.0	76.3	
Effective Green, g (s)		24.0				16.0		17.7		98.0	76.3	
Actuated g/C Ratio		0.16				0.11		0.12		0.65	0.51	
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)		262				183		198		617	861	
v/s Ratio Prot		c0.18				c0.12		0.09			0.18	
v/s Ratio Perm										c0.67		
v/c Ratio		1.11				1.10		0.74		1.03	0.36	
Uniform Delay, d1		63.0				67.0		63.9		26.0	22.2	
Progression Factor		1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2		89.2				96.5		13.9		43.4	0.3	
Delay (s)		152.2				163.5		77.9		69.4	22.4	
Level of Service		F				F		E		E	C	
Approach Delay (s)		152.2				163.5				71.0	22.4	
Approach LOS		F				F				E	C	

Intersection Summary

HCM Average Control Delay	89.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2
Lane Configurations	
Volume (vph)	82
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)	89
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)	88	36	15	92	0	219	10	43	9	21	139	101
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			0.90			0.94			1.00	
Flt Protected		0.97			0.99			1.00			0.95	
Satd. Flow (prot)		1780			1660			1759			1681	
Flt Permitted		0.97			0.99			1.00			0.95	
Satd. Flow (perm)		1780			1660			1759			1681	
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)	96	39	16	100	0	238	11	47	10	23	151	110
RTOR Reduction (vph)	0	7	0	0	1	0	0	19	0	0	0	0
Lane Group Flow (vph)	0	144	0	0	348	0	0	61	0	0	136	0
Turn Type	Split			Split							Prot	Perm
Protected Phases	3	3		4	4			2			1	
Permitted Phases												6
Actuated Green, G (s)		8.0			15.5			8.4			6.3	
Effective Green, g (s)		8.0			15.5			8.4			6.3	
Actuated g/C Ratio		0.15			0.29			0.15			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)		263			475			273			195	
v/s Ratio Prot		c0.08			c0.21			0.03			0.08	
v/s Ratio Perm												
v/c Ratio		0.55			0.73			0.22			0.70	
Uniform Delay, d1		21.4			17.5			20.0			23.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.3			5.7			0.4			10.4	
Delay (s)		23.8			23.2			20.5			33.4	
Level of Service		C			C			C			C	
Approach Delay (s)		23.8			23.2			20.5				
Approach LOS		C			C			C				

Intersection Summary

HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.1%	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)	1701
Flt Permitted	0.38
Satd. Flow (perm)	681
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	30
RTOR Reduction (vph)	0
Lane Group Flow (vph)	155
Turn Type	
Protected Phases	6
Permitted Phases	
Actuated Green, G (s)	18.7
Effective Green, g (s)	18.7
Actuated g/C Ratio	0.35
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	235
v/s Ratio Prot	
v/s Ratio Perm	c0.23
v/c Ratio	0.66
Uniform Delay, d1	15.1
Progression Factor	1.00
Incremental Delay, d2	6.5
Delay (s)	21.6
Level of Service	C
Approach Delay (s)	27.1
Approach LOS	C

Intersection Summary

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Volume (vph)	369	135	20	15	0	218	12	153	10	17	162	158
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			0.98			1.00	
Flt Protected		0.97			1.00			1.00			0.95	
Satd. Flow (prot)		1790			1622			1825			1681	
Flt Permitted		0.97			1.00			1.00			0.95	
Satd. Flow (perm)		1790			1622			1825			1681	
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)	401	147	22	16	0	237	13	166	11	18	176	172
RTOR Reduction (vph)	0	1	0	0	2	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	569	0	0	264	0	0	192	0	0	158	0
Turn Type	Split			Split							Prot	Perm
Protected Phases	3	3		4	4			2			1	
Permitted Phases												6
Actuated Green, G (s)		36.0			19.0			33.2			15.8	
Effective Green, g (s)		36.0			19.0			33.2			15.8	
Actuated g/C Ratio		0.30			0.16			0.28			0.13	
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)		537			257			505			221	
v/s Ratio Prot		c0.32			c0.16			0.11			0.09	
v/s Ratio Perm												
v/c Ratio		1.06			1.03			0.38			0.71	
Uniform Delay, d1		42.0			50.5			35.1			49.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		55.3			63.7			0.5			10.5	
Delay (s)		97.3			114.2			35.6			60.4	
Level of Service		F			F			D			E	
Approach Delay (s)		97.3			114.2			35.6				
Approach LOS		F			F			D				

Intersection Summary

HCM Average Control Delay	82.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT
Lane Configurations	
Volume (vph)	34
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	0.32
Satd. Flow (perm)	564
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	37
RTOR Reduction (vph)	0
Lane Group Flow (vph)	227
Turn Type	
Protected Phases	6
Permitted Phases	
Actuated Green, G (s)	53.0
Effective Green, g (s)	53.0
Actuated g/C Ratio	0.44
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	249
v/s Ratio Prot	
v/s Ratio Perm	c0.40
v/c Ratio	0.91
Uniform Delay, d1	31.3
Progression Factor	1.00
Incremental Delay, d2	34.3
Delay (s)	65.6
Level of Service	E
Approach Delay (s)	63.5
Approach LOS	E

Intersection Summary

HCM Signalized Intersection Capacity Analysis
11: W Lacey Blvd & 12th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	334	55	127	130	47	94	188	121	195	680	63
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	0.92	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)	34	363	60	138	141	51	102	204	132	212	739	68
RTOR Reduction (vph)	0	0	45	0	0	35	0	0	96	0	0	48
Lane Group Flow (vph)	34	363	15	138	141	16	102	204	36	212	739	20
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)	1.8	13.5	13.5	5.1	16.8	16.8	3.8	15.1	15.1	5.1	16.4	16.4
Effective Green, g (s)	1.8	13.5	13.5	5.1	16.8	16.8	3.8	15.1	15.1	5.1	16.4	16.4
Actuated g/C Ratio	0.03	0.25	0.25	0.09	0.31	0.31	0.07	0.28	0.28	0.09	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)	58	872	390	165	1559	485	123	975	436	165	1059	474
v/s Ratio Prot	0.02	c0.10		c0.08	c0.03		0.06	0.06		c0.12	c0.21	
v/s Ratio Perm			0.01			0.01			0.02			0.01
v/c Ratio	0.59	0.42	0.04	0.84	0.09	0.03	0.83	0.21	0.08	1.28	0.70	0.04
Uniform Delay, d1	26.1	17.3	15.7	24.4	13.6	13.3	25.2	15.3	14.7	24.8	17.0	13.6
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	14.2	0.3	0.0	29.1	0.0	0.0	34.8	0.1	0.1	166.1	2.0	0.0
Delay (s)	40.3	17.7	15.7	53.5	13.6	13.3	60.0	15.4	14.8	191.0	19.0	13.7
Level of Service	D	B	B	D	B	B	E	B	B	F	B	B
Approach Delay (s)		19.1			30.2			25.6			54.5	
Approach LOS		B			C			C			D	

Intersection Summary

HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.6%	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)	152	202	152	288	446	302	158	983	137	127	400	41
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	0.92	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)	165	220	165	313	485	328	172	1068	149	138	435	45
RTOR Reduction (vph)	0	0	128	0	0	170	0	0	77	0	0	31
Lane Group Flow (vph)	165	220	37	313	485	158	172	1068	72	138	435	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)	5.0	12.6	12.6	5.0	12.6	12.6	5.0	17.1	17.1	5.0	17.1	17.1
Effective Green, g (s)	5.0	12.6	12.6	5.0	12.6	12.6	5.0	17.1	17.1	5.0	17.1	17.1
Actuated g/C Ratio	0.09	0.23	0.23	0.09	0.23	0.23	0.09	0.31	0.31	0.09	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	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)	159	801	358	159	1150	358	159	1086	486	159	1086	486
v/s Ratio Prot	0.09	0.06		c0.18	0.10		c0.10	c0.30		0.08	0.12	
v/s Ratio Perm			0.02			c0.10			0.05			0.01
v/c Ratio	1.04	0.27	0.10	1.97	0.42	0.44	1.08	0.98	0.15	0.87	0.40	0.03
Uniform Delay, d1	25.4	17.8	17.1	25.4	18.4	18.5	25.4	19.2	14.0	25.0	15.3	13.5
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	81.7	0.2	0.1	457.8	0.3	0.9	94.9	23.2	0.1	36.0	0.2	0.0
Delay (s)	107.0	18.0	17.2	483.1	18.7	19.4	120.2	42.3	14.2	61.0	15.5	13.5
Level of Service	F	B	B	F	B	B	F	D	B	E	B	B
Approach Delay (s)		44.5			148.0			49.0			25.5	
Approach LOS		D			F			D			C	

Intersection Summary

HCM Average Control Delay	74.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.1%	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)	147	395	86	93	250	81	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	0.92	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)	160	429	93	101	272	88	45	159	205	11	39	39
RTOR Reduction (vph)	0	0	65	0	0	64	0	0	158	0	0	31
Lane Group Flow (vph)	160	429	28	101	272	24	45	159	47	11	39	8
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	13.4	13.4	3.9	12.0	12.0	1.6	10.2	10.2	0.7	9.3	9.3
Effective Green, g (s)	5.3	13.4	13.4	3.9	12.0	12.0	1.6	10.2	10.2	0.7	9.3	9.3
Actuated g/C Ratio	0.12	0.30	0.30	0.09	0.27	0.27	0.04	0.23	0.23	0.02	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)	212	1073	480	156	961	430	64	430	365	28	392	333
v/s Ratio Prot	c0.09	c0.12		0.06	0.08		c0.03	c0.09		0.01	0.02	
v/s Ratio Perm			0.02			0.02			0.03			0.01
v/c Ratio	0.75	0.40	0.06	0.65	0.28	0.06	0.70	0.37	0.13	0.39	0.10	0.02
Uniform Delay, d1	18.8	12.2	10.9	19.5	12.7	11.9	21.1	14.3	13.5	21.5	14.1	13.9
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	14.1	0.2	0.1	8.9	0.2	0.1	29.5	0.5	0.2	8.9	0.1	0.0
Delay (s)	32.9	12.5	11.0	28.4	12.9	12.0	50.5	14.8	13.6	30.4	14.2	13.9
Level of Service	C	B	B	C	B	B	D	B	B	C	B	B
Approach Delay (s)		17.1			16.1			18.2			16.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	44.2	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	343	85	227	601	19	155	34	225	68	121	208
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	0.92	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)	30	373	92	247	653	21	168	37	245	74	132	226
RTOR Reduction (vph)	0	0	66	0	0	14	0	0	183	0	0	179
Lane Group Flow (vph)	30	373	26	247	653	7	168	37	62	74	132	47
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	14.3	14.3	5.1	17.7	17.7	5.1	13.0	13.0	2.8	10.7	10.7
Effective Green, g (s)	1.7	14.3	14.3	5.1	17.7	17.7	5.1	13.0	13.0	2.8	10.7	10.7
Actuated g/C Ratio	0.03	0.28	0.28	0.10	0.35	0.35	0.10	0.25	0.25	0.05	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)	59	988	442	176	1223	547	176	473	402	97	389	331
v/s Ratio Prot	0.02	0.11		c0.14	c0.18		c0.09	0.02		0.04	c0.07	
v/s Ratio Perm			0.02			0.00			0.04			0.03
v/c Ratio	0.51	0.38	0.06	1.40	0.53	0.01	0.95	0.08	0.15	0.76	0.34	0.14
Uniform Delay, d1	24.3	14.9	13.5	23.1	13.4	11.0	22.9	14.5	14.8	23.9	17.2	16.5
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	6.7	0.2	0.1	212.0	0.5	0.0	54.2	0.1	0.2	29.2	0.5	0.2
Delay (s)	31.1	15.1	13.6	235.1	13.9	11.0	77.1	14.6	15.0	53.1	17.8	16.7
Level of Service	C	B	B	F	B	B	E	B	B	D	B	B
Approach Delay (s)		15.8			73.1			38.2			23.3	
Approach LOS		B			E			D			C	

Intersection Summary

HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	51.2	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)	54	114	23	27	180	179	47	194	16	99	113	56
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	0.92	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)	59	124	25	29	196	195	51	211	17	108	123	61
RTOR Reduction (vph)	0	0	18	0	0	151	0	0	13	0	0	43
Lane Group Flow (vph)	59	124	7	29	196	44	51	211	4	108	123	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)	2.4	10.8	10.8	0.7	9.1	9.1	1.5	9.6	9.6	3.6	11.7	11.7
Effective Green, g (s)	2.4	10.8	10.8	0.7	9.1	9.1	1.5	9.6	9.6	3.6	11.7	11.7
Actuated g/C Ratio	0.06	0.27	0.27	0.02	0.22	0.22	0.04	0.24	0.24	0.09	0.29	0.29
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)	104	494	420	30	417	354	65	439	373	157	536	455
v/s Ratio Prot	c0.03	0.07		0.02	c0.11		0.03	c0.11		c0.06	0.07	
v/s Ratio Perm			0.00			0.03			0.00			0.01
v/c Ratio	0.57	0.25	0.02	0.97	0.47	0.12	0.78	0.48	0.01	0.69	0.23	0.04
Uniform Delay, d1	18.6	11.8	11.0	20.0	13.7	12.6	19.4	13.4	11.9	18.0	11.1	10.4
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	6.9	0.3	0.0	149.0	0.8	0.2	44.9	0.8	0.0	11.8	0.2	0.0
Delay (s)	25.6	12.0	11.0	169.0	14.5	12.8	64.4	14.2	11.9	29.8	11.3	10.5
Level of Service	C	B	B	F	B	B	E	B	B	C	B	B
Approach Delay (s)		15.8			24.4			23.3			18.0	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	40.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	41.8%	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)	72	207	50	51	134	162	49	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	0.92	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)	78	225	54	55	146	176	53	239	35	250	247	48
RTOR Reduction (vph)	0	0	44	0	0	143	0	0	27	0	0	30
Lane Group Flow (vph)	78	225	10	55	146	33	53	239	8	250	247	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	10.4	10.4	7.7	16.6	16.6
Effective Green, g (s)	2.3	8.4	8.4	2.3	8.4	8.4	1.5	10.4	10.4	7.7	16.6	16.6
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)	91	349	297	91	349	297	59	432	367	304	690	587
v/s Ratio Prot	c0.04	c0.12		0.03	0.08		0.03	c0.13		c0.14	0.13	
v/s Ratio Perm			0.01			0.02			0.01			0.01
v/c Ratio	0.86	0.64	0.03	0.60	0.42	0.11	0.90	0.55	0.02	0.82	0.36	0.03
Uniform Delay, d1	21.1	16.8	14.9	20.8	16.0	15.1	21.6	15.2	13.3	17.9	10.2	9.0
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	50.5	4.1	0.0	10.8	0.8	0.2	80.5	1.5	0.0	16.2	0.3	0.0
Delay (s)	71.6	20.9	14.9	31.6	16.9	15.3	102.1	16.7	13.3	34.1	10.6	9.0
Level of Service	E	C	B	C	B	B	F	B	B	C	B	A
Approach Delay (s)		31.1			18.3			30.2			21.2	
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)	44.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
14: W Lacey Blvd & N 11th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	121	103	55	174	17	183	351	43	57	482	169
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	3493		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	3493		3433	3481		1770	3539	1583
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)	82	132	112	60	189	18	199	382	47	62	524	184
RTOR Reduction (vph)	0	0	98	0	15	0	0	14	0	0	0	116
Lane Group Flow (vph)	82	132	14	60	192	0	199	415	0	62	524	68
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)	2.4	5.4	5.4	2.9	5.9		3.5	16.1		3.6	16.2	16.2
Effective Green, g (s)	2.4	5.4	5.4	2.9	5.9		3.5	16.1		3.6	16.2	16.2
Actuated g/C Ratio	0.05	0.12	0.12	0.07	0.13		0.08	0.37		0.08	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
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)	187	434	194	117	468		273	1274		145	1303	583
v/s Ratio Prot	0.02	c0.04		0.03	c0.06		c0.06	0.12		0.04	c0.15	
v/s Ratio Perm			0.01									0.04
v/c Ratio	0.44	0.30	0.07	0.51	0.41		0.73	0.33		0.43	0.40	0.12
Uniform Delay, d1	20.1	17.6	17.1	19.9	17.5		19.8	10.0		19.2	10.3	9.2
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	0.4	0.2	3.8	0.6		9.4	0.2		2.0	0.2	0.1
Delay (s)	21.8	18.0	17.2	23.6	18.0		29.1	10.2		21.2	10.5	9.3
Level of Service	C	B	B	C	B		C	B		C	B	A
Approach Delay (s)		18.7			19.3			16.2			11.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.6%	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)	222	281	172	86	290	92	311	832	56	114	501	103
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	0.96		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)	3433	3539	1583	1770	3411		3433	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)	3433	3539	1583	1770	3411		3433	3506		1770	3539	1583
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)	241	305	187	93	315	100	338	904	61	124	545	112
RTOR Reduction (vph)	0	0	145	0	56	0	0	8	0	0	0	77
Lane Group Flow (vph)	241	305	42	93	359	0	338	957	0	124	545	35
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)	5.0	12.3	12.3	4.4	11.7		5.0	17.0		5.0	17.0	17.0
Effective Green, g (s)	5.0	12.3	12.3	4.4	11.7		5.0	17.0		5.0	17.0	17.0
Actuated g/C Ratio	0.09	0.22	0.22	0.08	0.21		0.09	0.31		0.09	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)	314	796	356	142	730		314	1090		162	1100	492
v/s Ratio Prot	c0.07	0.09		0.05	c0.11		0.10	c0.27		c0.07	0.15	
v/s Ratio Perm			0.03									0.02
v/c Ratio	0.77	0.38	0.12	0.65	0.49		1.08	0.88		0.77	0.50	0.07
Uniform Delay, d1	24.3	18.0	16.9	24.4	18.9		24.9	17.9		24.3	15.4	13.3
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	10.7	0.3	0.1	10.4	0.5		72.6	8.2		19.2	0.4	0.1
Delay (s)	35.0	18.3	17.0	34.8	19.4		97.5	26.1		43.4	15.7	13.3
Level of Service	C	B	B	C	B		F	C		D	B	B
Approach Delay (s)		23.5			22.2			44.6			19.8	
Approach LOS		C			C			D			B	

Intersection Summary

HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.7%	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)	0	0	0	147	25	176	48	661	0	0	486	349
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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	160	27	191	52	718	0	0	528	379
RTOR Reduction (vph)	0	0	0	0	0	142	0	0	0	0	0	222
Lane Group Flow (vph)	0	0	0	160	27	49	52	718	0	0	528	157
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				7.0	7.0	7.0	1.1	19.3			14.2	14.2
Effective Green, g (s)				7.0	7.0	7.0	1.1	19.3			14.2	14.2
Actuated g/C Ratio				0.20	0.20	0.20	0.03	0.56			0.41	0.41
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)				361	380	323	57	1991			1465	655
v/s Ratio Prot				c0.09	0.01		0.03	c0.20			0.15	
v/s Ratio Perm						0.03						0.10
v/c Ratio				0.44	0.07	0.15	0.91	0.36			0.36	0.24
Uniform Delay, d1				11.9	11.0	11.2	16.6	4.1			6.9	6.5
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.9	0.1	0.2	87.4	0.1			0.2	0.2
Delay (s)				12.8	11.1	11.4	104.0	4.2			7.1	6.7
Level of Service				B	B	B	F	A			A	A
Approach Delay (s)		0.0			12.0			11.0			6.9	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	34.3	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	40	928	0	0	812	226
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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	198	42	121	43	1009	0	0	883	246
RTOR Reduction (vph)	0	0	0	0	0	66	0	0	0	0	0	135
Lane Group Flow (vph)	0	0	0	198	42	55	43	1009	0	0	883	111
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				7.8	7.8	7.8	1.2	22.4			17.2	17.2
Effective Green, g (s)				7.8	7.8	7.8	1.2	22.4			17.2	17.2
Actuated g/C Ratio				0.20	0.20	0.20	0.03	0.59			0.45	0.45
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)				361	380	323	56	2075			1593	713
v/s Ratio Prot				c0.11	0.02		0.02	c0.29			c0.25	
v/s Ratio Perm						0.03						0.07
v/c Ratio				0.55	0.11	0.17	0.77	0.49			0.55	0.16
Uniform Delay, d1				13.6	12.4	12.5	18.4	4.6			7.7	6.2
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				1.7	0.1	0.3	46.0	0.2			0.4	0.1
Delay (s)				15.3	12.5	12.8	64.4	4.8			8.1	6.3
Level of Service				B	B	B	E	A			A	A
Approach Delay (s)		0.0			14.1			7.2			7.7	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	38.2	Sum of lost time (s)	8.0
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 (vph)	157	28	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	0.92	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)	171	30	58	0	0	0	0	618	122	98	588	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	0	235	0	0	0	0	0	710	0	98	588	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)		8.2						15.6		2.8	22.4	
Effective Green, g (s)		8.2						15.6		2.8	22.4	
Actuated g/C Ratio		0.21						0.40		0.07	0.58	
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)		372						1395		128	2054	
v/s Ratio Prot		c0.13						c0.21		c0.06	0.17	
v/s Ratio Perm												
v/c Ratio		0.63						0.51		0.77	0.29	
Uniform Delay, d1		13.8						8.6		17.6	4.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		3.5						0.3		23.5	0.1	
Delay (s)		17.3						8.9		41.0	4.2	
Level of Service		B						A		D	A	
Approach Delay (s)		17.3			0.0			8.9			9.4	
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)	38.6	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)	596	41	62	0	0	0	0	562	106	269	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		0.99						0.98		1.00	1.00	
Flt Protected		0.96						1.00		0.95	1.00	
Satd. Flow (prot)		1765						3455		1770	3539	
Flt Permitted		0.96						1.00		0.95	1.00	
Satd. Flow (perm)		1765						3455		1770	3539	
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)	648	45	67	0	0	0	0	611	115	292	867	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	753	0	0	0	0	0	693	0	292	867	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)		16.1						14.9		4.0	22.9	
Effective Green, g (s)		16.1						14.9		4.0	22.9	
Actuated g/C Ratio		0.34						0.32		0.09	0.49	
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)		605						1095		151	1724	
v/s Ratio Prot		c0.43						c0.20		c0.17	0.24	
v/s Ratio Perm												
v/c Ratio		1.25						0.63		1.93	0.50	
Uniform Delay, d1		15.4						13.7		21.5	8.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		123.9						1.2		443.6	0.2	
Delay (s)		139.3						14.9		465.1	8.4	
Level of Service		F						B		F	A	
Approach Delay (s)		139.3			0.0			14.9			123.5	
Approach LOS		F			A			B			F	

Intersection Summary

HCM Average Control Delay	98.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Hanford Armona Rd & S 11th Avenue

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	115	47	63	129	86	37	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	0.92	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)	124	125	51	68	140	93	40	337	78	79	260	117
RTOR Reduction (vph)	0	0	38	0	0	76	0	0	58	0	0	85
Lane Group Flow (vph)	124	125	13	68	140	17	40	337	20	79	260	32
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)	5.9	11.2	11.2	2.5	7.8	7.8	1.6	11.0	11.0	2.5	11.9	11.9
Effective Green, g (s)	5.9	11.2	11.2	2.5	7.8	7.8	1.6	11.0	11.0	2.5	11.9	11.9
Actuated g/C Ratio	0.14	0.26	0.26	0.06	0.18	0.18	0.04	0.25	0.25	0.06	0.28	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	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)	242	483	410	102	336	286	66	901	403	102	975	436
v/s Ratio Prot	c0.07	c0.07		0.04	c0.08		0.02	c0.10		c0.04	0.07	
v/s Ratio Perm			0.01			0.01			0.01			0.02
v/c Ratio	0.51	0.26	0.03	0.67	0.42	0.06	0.61	0.37	0.05	0.77	0.27	0.07
Uniform Delay, d1	17.3	12.7	12.0	19.9	15.7	14.7	20.5	13.3	12.2	20.1	12.2	11.6
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	1.8	0.3	0.0	15.2	0.8	0.1	14.7	0.3	0.1	29.9	0.1	0.1
Delay (s)	19.1	13.0	12.0	35.2	16.5	14.7	35.2	13.5	12.2	49.9	12.4	11.6
Level of Service	B	B	B	D	B	B	D	B	B	D	B	B
Approach Delay (s)		15.4			20.2			15.2			18.7	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	20.0
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)	137	190	53	68	168	91	79	294	77	114	310	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	0.92	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)	149	207	58	74	183	99	86	320	84	124	337	166
RTOR Reduction (vph)	0	0	43	0	0	80	0	0	62	0	0	115
Lane Group Flow (vph)	149	207	15	74	183	19	86	320	22	124	337	51
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)	5.7	12.4	12.4	2.7	9.4	9.4	2.7	12.6	12.6	5.3	15.2	15.2
Effective Green, g (s)	5.7	12.4	12.4	2.7	9.4	9.4	2.7	12.6	12.6	5.3	15.2	15.2
Actuated g/C Ratio	0.12	0.25	0.25	0.06	0.19	0.19	0.06	0.26	0.26	0.11	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	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)	206	471	401	98	357	304	98	910	407	191	1098	491
v/s Ratio Prot	c0.08	c0.11		0.04	0.10		0.05	0.09		c0.07	c0.10	
v/s Ratio Perm			0.01			0.01			0.01			0.03
v/c Ratio	0.72	0.44	0.04	0.76	0.51	0.06	0.88	0.35	0.05	0.65	0.31	0.10
Uniform Delay, d1	20.9	15.4	13.8	22.8	17.7	16.2	23.0	14.9	13.7	21.0	12.9	12.0
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	11.8	0.7	0.0	27.6	1.2	0.1	53.1	0.2	0.1	7.4	0.2	0.1
Delay (s)	32.7	16.0	13.8	50.4	19.0	16.3	76.1	15.1	13.8	28.4	13.0	12.1
Level of Service	C	B	B	D	B	B	E	B	B	C	B	B
Approach Delay (s)		21.7			24.8			25.6			15.8	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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	589	134	10	179	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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	640	146	11	195	118	0	0	64	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)												
pX, platoon unblocked												
vC, conflicting volume	157			0			1420	1437	0	1491	1432	78
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	157			0			1420	1437	0	1491	1432	78
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			61			0	0	100	0	20	96
cM capacity (veh/h)	1421			1622			23	80	1084	0	81	967

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	713	84	313	99
Volume Left	640	0	195	0
Volume Right	0	11	0	35
cSH	1622	1700	32	119
Volume to Capacity	0.39	0.05	9.77	0.83
Queue Length 95th (ft)	48	0	Err	124
Control Delay (s)	8.1	0.0	Err	110.3
Lane LOS	A		F	F
Approach Delay (s)	7.3		Err	110.3
Approach LOS			F	F

Intersection Summary			
Average Delay	2603.5		
Intersection Capacity Utilization	61.6%	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)	0	0	0	379	152	12	115	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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	412	165	13	125	93	0	0	182	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	178			0			1065	1002	0	1042	996	89
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			0			1065	1002	0	1042	996	89
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			75			0	48	100	100	0	93
cM capacity (veh/h)	1395			1622			0	180	1084	89	181	951

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	495	96	218	249
Volume Left	412	0	125	0
Volume Right	0	13	0	67
cSH	1622	1700	0	232
Volume to Capacity	0.25	0.06	Err	1.07
Queue Length 95th (ft)	25	0	Err	269
Control Delay (s)	7.0	0.0	Err	124.6
Lane LOS	A		F	F
Approach Delay (s)	5.9		Err	124.6
Approach LOS			F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	182	9	0	0	0	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	198	10	0	0	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			208		203	104
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			208		203	104
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)			1361		767	931

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	132	76	32
Volume Left	0	0	0
Volume Right	0	10	32
cSH	1700	1700	931
Volume to Capacity	0.08	0.04	0.03
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0		9.0
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
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	24	0	0	0	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	365	26	0	0	0	23
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			391		378	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			391		378	196
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)			1164		596	813

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	243	148	23
Volume Left	0	0	0
Volume Right	0	26	23
cSH	1700	1700	813
Volume to Capacity	0.14	0.09	0.03
Queue Length 95th (ft)	0	0	2
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	0.5		
Intersection Capacity Utilization	20.1%	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 (vph)	62	91	24	137	106	48	34	333	93	62	758	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	3374		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	3374		1770	3539	1583	1770	3539	1583
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)	67	99	26	149	115	52	37	362	101	67	824	109
RTOR Reduction (vph)	0	22	0	0	41	0	0	0	68	0	0	68
Lane Group Flow (vph)	67	103	0	149	126	0	37	362	33	67	824	41
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)	2.6	6.3		5.6	9.3		1.6	14.9	14.9	2.6	15.9	15.9
Effective Green, g (s)	2.6	6.3		5.6	9.3		1.6	14.9	14.9	2.6	15.9	15.9
Actuated g/C Ratio	0.06	0.14		0.12	0.20		0.04	0.33	0.33	0.06	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
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)	101	476		218	691		62	1161	520	101	1239	554
v/s Ratio Prot	0.04	0.03		c0.08	c0.04		0.02	0.10		c0.04	c0.23	
v/s Ratio Perm									0.02			0.03
v/c Ratio	0.66	0.22		0.68	0.18		0.60	0.31	0.06	0.66	0.67	0.07
Uniform Delay, d1	21.0	17.4		19.1	14.9		21.6	11.4	10.5	21.0	12.5	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	15.2	0.2		8.5	0.1		14.5	0.2	0.1	15.2	1.4	0.1
Delay (s)	36.2	17.6		27.6	15.0		36.1	11.6	10.5	36.2	13.9	9.9
Level of Service	D	B		C	B		D	B	B	D	B	A
Approach Delay (s)		24.1			21.0			13.2			14.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.5%	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	141	43	125	129	103	48	942	290	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	0.96		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	3414		1770	3303		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	3414		1770	3303		1770	3539	1583	1770	3539	1583
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)	191	153	47	136	140	112	52	1024	315	63	373	116
RTOR Reduction (vph)	0	41	0	0	93	0	0	0	201	0	0	72
Lane Group Flow (vph)	191	159	0	136	159	0	52	1024	114	63	373	44
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)	5.1	6.3		7.3	8.5		1.8	18.1	18.1	2.7	19.0	19.0
Effective Green, g (s)	5.1	6.3		7.3	8.5		1.8	18.1	18.1	2.7	19.0	19.0
Actuated g/C Ratio	0.10	0.12		0.14	0.17		0.04	0.36	0.36	0.05	0.38	0.38
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)	179	427		256	557		63	1271	568	95	1334	597
v/s Ratio Prot	c0.11	0.05		0.08	c0.05		0.03	c0.29		c0.04	0.11	
v/s Ratio Perm									0.07			0.03
v/c Ratio	1.07	0.37		0.53	0.29		0.83	0.81	0.20	0.66	0.28	0.07
Uniform Delay, d1	22.6	20.2		20.0	18.3		24.1	14.6	11.2	23.4	10.9	10.1
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	86.2	0.5		2.1	0.3		56.1	3.8	0.2	16.1	0.1	0.1
Delay (s)	108.8	20.8		22.1	18.6		80.2	18.4	11.3	39.5	11.0	10.1
Level of Service	F	C		C	B		F	B	B	D	B	B
Approach Delay (s)		63.8			19.8			19.1			14.1	
Approach LOS		E			B			B			B	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	12.0
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)	0	0	0	35	23	90	40	472	0	0	401	549
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	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	38	25	98	43	513	0	0	436	597
RTOR Reduction (vph)	0	0	0	0	86	0	0	0	0	0	0	319
Lane Group Flow (vph)	0	0	0	0	75	0	43	513	0	0	436	278
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					3.8		1.0	19.6			14.6	14.6
Effective Green, g (s)					3.8		1.0	19.6			14.6	14.6
Actuated g/C Ratio					0.12		0.03	0.62			0.46	0.46
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)					205		56	2209			1646	736
v/s Ratio Prot					c0.04		0.02	c0.14			0.12	
v/s Ratio Perm												c0.18
v/c Ratio					0.37		0.77	0.23			0.26	0.38
Uniform Delay, d1					12.7		15.1	2.6			5.1	5.5
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					1.1		46.0	0.1			0.1	0.3
Delay (s)					13.8		61.1	2.6			5.2	5.8
Level of Service					B		E	A			A	A
Approach Delay (s)		0.0			13.8			7.2			5.5	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	31.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.0%	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)	0	0	0	26	19	145	57	1113	0	0	388	230
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					0.90		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1660		1770	3539			3539	1583
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1660		1770	3539			3539	1583
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)	0	0	0	28	21	158	62	1210	0	0	422	250
RTOR Reduction (vph)	0	0	0	0	39	0	0	0	0	0	0	134
Lane Group Flow (vph)	0	0	0	0	168	0	62	1210	0	0	422	116
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					7.3		1.9	24.3			18.4	18.4
Effective Green, g (s)					7.3		1.9	24.3			18.4	18.4
Actuated g/C Ratio					0.18		0.05	0.61			0.46	0.46
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)					306		85	2172			1644	736
v/s Ratio Prot					c0.10		0.04	c0.34			0.12	
v/s Ratio Perm												0.07
v/c Ratio					0.55		0.73	0.56			0.26	0.16
Uniform Delay, d1					14.7		18.6	4.5			6.4	6.1
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					2.0		26.6	0.3			0.1	0.1
Delay (s)					16.7		45.2	4.8			6.5	6.2
Level of Service					B		D	A			A	A
Approach Delay (s)		0.0			16.7			6.8			6.4	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	39.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
22: 3rd Street & 10th Street

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	15	19	10	0	74	0	273	45	127	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	1392		1583		1863	1583	1770	3539	
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)	173	16	21	11	0	80	0	297	49	138	355	0
RTOR Reduction (vph)	0	0	17	0	0	63	0	0	36	0	0	0
Lane Group Flow (vph)	173	16	4	11	0	17	0	297	13	138	355	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)	6.9	6.9	6.9	6.9		6.9		8.6	8.6	5.7	18.3	
Effective Green, g (s)	6.9	6.9	6.9	6.9		6.9		8.6	8.6	5.7	18.3	
Actuated g/C Ratio	0.21	0.21	0.21	0.21		0.21		0.26	0.26	0.17	0.55	
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)	368	387	329	289		329		483	410	304	1951	
v/s Ratio Prot		0.01						c0.16		c0.08	0.10	
v/s Ratio Perm	c0.10		0.00	0.01		0.01			0.01			
v/c Ratio	0.47	0.04	0.01	0.04		0.05		0.61	0.03	0.45	0.18	
Uniform Delay, d1	11.5	10.5	10.4	10.5		10.5		10.8	9.2	12.4	3.7	
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	0.0	0.0	0.1		0.1		2.3	0.0	1.1	0.0	
Delay (s)	12.5	10.6	10.5	10.6		10.6		13.2	9.2	13.4	3.8	
Level of Service	B	B	B	B		B		B	A	B	A	
Approach Delay (s)		12.1			10.6			12.6			6.5	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
22: 3rd Street & 10th Street

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	762	18	17	12	0	87	0	359	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	1386		1583		1863	1583	1770	3539	
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)	828	20	18	13	0	95	0	390	37	128	324	0
RTOR Reduction (vph)	0	0	12	0	0	62	0	0	26	0	0	0
Lane Group Flow (vph)	828	20	6	13	0	33	0	390	11	128	324	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)	16.1	16.1	16.1	16.1		16.1		14.2	14.2	4.0	22.2	
Effective Green, g (s)	16.1	16.1	16.1	16.1		16.1		14.2	14.2	4.0	22.2	
Actuated g/C Ratio	0.35	0.35	0.35	0.35		0.35		0.31	0.31	0.09	0.48	
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)	615	648	550	482		550		571	485	153	1697	
v/s Ratio Prot		0.01						c0.21		c0.07	0.09	
v/s Ratio Perm	c0.47		0.00	0.01		0.02			0.01			
v/c Ratio	1.35	0.03	0.01	0.03		0.06		0.68	0.02	0.84	0.19	
Uniform Delay, d1	15.1	10.0	9.9	9.9		10.1		14.1	11.2	20.8	6.9	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	166.5	0.0	0.0	0.0		0.0		3.4	0.0	30.9	0.1	
Delay (s)	181.6	10.0	9.9	10.0		10.1		17.4	11.2	51.7	7.0	
Level of Service	F	A	A	A		B		B	B	D	A	
Approach Delay (s)		174.1			10.1			16.9			19.6	
Approach LOS		F			B			B			B	

Intersection Summary

HCM Average Control Delay	90.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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	782	69	15	240	38
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	28	12	77	29	11	42	104	850	75	16	261	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	1421	1448	282	1396	1431	888	302			925		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1421	1448	282	1396	1431	888	302			925		
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 %	67	90	90	68	91	88	92			98		
cM capacity (veh/h)	86	118	757	91	121	343	1259			739		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	117	83	104	925	16	302
Volume Left	28	29	104	0	16	0
Volume Right	77	42	0	75	0	41
cSH	220	154	1259	1700	739	1700
Volume to Capacity	0.53	0.54	0.08	0.54	0.02	0.18
Queue Length 95th (ft)	70	67	7	0	2	0
Control Delay (s)	38.6	52.8	8.1	0.0	10.0	0.0
Lane LOS	E	F	A		A	
Approach Delay (s)	38.6	52.8	0.8		0.5	
Approach LOS	E	F				

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
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)	14	7	66	44	11	20	65	231	43	55	513	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	15	8	72	48	12	22	71	251	47	60	558	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)												
pX, platoon unblocked												
vC, conflicting volume	1105	1124	565	1097	1108	274	573			298		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1105	1124	565	1097	1108	274	573			298		
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	86	67	94	97	93			95		
cM capacity (veh/h)	159	182	524	145	186	764	1000			1263		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	95	82	71	298	60	573
Volume Left	15	48	71	0	60	0
Volume Right	72	22	0	47	0	15
cSH	344	193	1000	1700	1263	1700
Volume to Capacity	0.27	0.42	0.07	0.18	0.05	0.34
Queue Length 95th (ft)	27	48	6	0	4	0
Control Delay (s)	19.4	36.6	8.9	0.0	8.0	0.0
Lane LOS	C	E	A		A	
Approach Delay (s)	19.4	36.6	1.7		0.8	
Approach LOS	C	E				

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	52.4%	ICU Level of Service	A	
Analysis Period (min)	15			

BAKERSFIELD NO-BUILD CONDITIONS SYNCHRO OUTPUT

HCM Signalized Intersection Capacity Analysis
1: SR-58 EB Off Ramp & S Union Ave

10/12/2010

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1168	419	0	2213	1336	351
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	4926	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	4926	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1270	455	0	2405	1452	382
RTOR Reduction (vph)	0	2	0	0	32	0
Lane Group Flow (vph)	1270	453	0	2405	1802	0
Turn Type		Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	85.8	85.8		55.1	55.1	
Effective Green, g (s)	85.8	85.8		55.1	55.1	
Actuated g/C Ratio	0.57	0.57		0.37	0.37	
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)	1012	905		1868	1809	
v/s Ratio Prot	c0.72			c0.47	0.37	
v/s Ratio Perm		0.29				
v/c Ratio	1.25	0.50		1.29	1.00	
Uniform Delay, d1	32.1	19.3		47.4	47.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	122.9	0.4		133.5	20.2	
Delay (s)	155.0	19.7		181.0	67.5	
Level of Service	F	B		F	E	
Approach Delay (s)	119.3			181.0	67.5	
Approach LOS	F			F	E	

Intersection Summary			
HCM Average Control Delay	128.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: SR-58 EB Off Ramp & S Union Ave

10/12/2010

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	586	651	0	1432	1123	412
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	0.96	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	4881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	4881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	637	708	0	1557	1221	448
RTOR Reduction (vph)	0	9	0	0	102	0
Lane Group Flow (vph)	637	699	0	1557	1567	0
Turn Type		Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.7	29.7		26.1	26.1	
Effective Green, g (s)	29.7	29.7		26.1	26.1	
Actuated g/C Ratio	0.46	0.46		0.40	0.40	
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)	810	724		2045	1963	
v/s Ratio Prot	0.36			0.31	c0.32	
v/s Ratio Perm		c0.44				
v/c Ratio	0.79	0.97		0.76	0.80	
Uniform Delay, d1	14.9	17.1		16.7	17.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	24.9		1.8	2.5	
Delay (s)	20.0	42.0		18.6	19.6	
Level of Service	B	D		B	B	
Approach Delay (s)	31.6			18.6	19.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	9.1
Intersection Capacity Utilization	78.8%	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)	546	2	432	0	0	0	0	268	50	131	360	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	0.92	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)	593	2	470	0	0	0	0	291	54	142	391	0
RTOR Reduction (vph)	0	237	0	0	0	0	0	0	42	0	0	0
Lane Group Flow (vph)	534	294	0	0	0	0	0	291	12	142	391	0
Turn Type	Split								Perm	Prot		
Protected Phases	8	8						6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	21.7	21.7						12.1	12.1	6.0	21.8	
Effective Green, g (s)	21.7	21.7						12.1	12.1	6.0	21.8	
Actuated g/C Ratio	0.41	0.41						0.23	0.23	0.11	0.41	
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)	683	620						802	359	199	1445	
v/s Ratio Prot	c0.32	0.19						c0.08		c0.08	0.11	
v/s Ratio Perm									0.01			
v/c Ratio	0.78	0.47						0.36	0.03	0.71	0.27	
Uniform Delay, d1	13.8	11.7						17.4	16.1	22.9	10.5	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.1	0.7						0.5	0.1	9.6	0.2	
Delay (s)	19.9	12.4						17.9	16.2	32.5	10.7	
Level of Service	B	B						B	B	C	B	
Approach Delay (s)		16.1			0.0			17.6			16.5	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	13.6
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)	1056	7	174	0	0	0	0	280	68	236	114	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	0.96						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1636						3539	1583	1770	3539	
Flt Permitted	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1636						3539	1583	1770	3539	
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)	1148	8	189	0	0	0	0	304	74	257	124	0
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	61	0	0	0
Lane Group Flow (vph)	689	641	0	0	0	0	0	304	13	257	124	0
Turn Type	Split								Perm	Prot		
Protected Phases	8	8						6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	38.5	38.5						14.3	14.3	13.9	31.9	
Effective Green, g (s)	38.5	38.5						14.3	14.3	13.9	31.9	
Actuated g/C Ratio	0.48	0.48						0.18	0.18	0.17	0.40	
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)	806	784						630	282	306	1406	
v/s Ratio Prot	c0.41	0.39						c0.09		c0.15	0.04	
v/s Ratio Perm									0.01			
v/c Ratio	0.85	0.82						0.48	0.05	0.84	0.09	
Uniform Delay, d1	18.4	17.9						29.7	27.4	32.1	15.1	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.1	6.9						1.0	0.1	17.3	0.0	
Delay (s)	27.5	24.8						30.7	27.5	49.4	15.2	
Level of Service	C	C						C	C	D	B	
Approach Delay (s)		26.2			0.0			30.1			38.3	
Approach LOS		C			A			C			D	

Intersection Summary			
HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	13.6
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: E Brundage Lane & Oak St

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	236	171	104	185	65	374	409	171	36	212	261
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	3401		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	3401		1770	3539	1583	1770	3539	1583
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)	226	257	186	113	201	71	407	445	186	39	230	284
RTOR Reduction (vph)	0	0	149	0	49	0	0	0	125	0	0	244
Lane Group Flow (vph)	226	257	38	113	223	0	407	445	61	39	230	40
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)	11.0	12.5	12.5	8.3	9.8		14.5	20.3	20.3	2.9	8.7	8.7
Effective Green, g (s)	11.0	12.5	12.5	8.3	9.8		14.5	20.3	20.3	2.9	8.7	8.7
Actuated g/C Ratio	0.18	0.20	0.20	0.13	0.16		0.23	0.33	0.33	0.05	0.14	0.14
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)	314	714	319	237	538		414	1159	518	83	497	222
v/s Ratio Prot	c0.13	0.07		0.06	c0.07		c0.23	c0.13		0.02	0.06	
v/s Ratio Perm			0.02						0.04			0.03
v/c Ratio	0.72	0.36	0.12	0.48	0.41		0.98	0.38	0.12	0.47	0.46	0.18
Uniform Delay, d1	24.0	21.3	20.2	24.8	23.5		23.6	16.0	14.6	28.8	24.5	23.5
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	6.4	0.1	0.1	0.6	0.2		39.4	0.1	0.0	1.5	0.2	0.1
Delay (s)	30.5	21.4	20.3	25.4	23.7		63.1	16.1	14.6	30.3	24.8	23.6
Level of Service	C	C	C	C	C		E	B	B	C	C	C
Approach Delay (s)		24.2			24.2			34.3			24.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.3%	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)	365	473	673	214	281	102	460	442	180	89	770	515
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	0.92	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)	397	514	732	233	305	111	500	480	196	97	837	560
RTOR Reduction (vph)	0	0	349	0	26	0	0	0	161	0	0	321
Lane Group Flow (vph)	397	514	383	233	390	0	500	480	35	97	837	239
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)	31.0	35.0	35.0	19.8	23.8		39.0	25.5	25.5	46.5	33.0	33.0
Effective Green, g (s)	31.0	35.0	35.0	19.8	23.8		39.0	25.5	25.5	46.5	33.0	33.0
Actuated g/C Ratio	0.21	0.24	0.24	0.14	0.16		0.27	0.18	0.18	0.32	0.23	0.23
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)	379	855	383	242	559		477	623	279	568	807	361
v/s Ratio Prot	0.22	0.15		c0.13	c0.11		c0.28	0.14		0.05	c0.24	
v/s Ratio Perm			c0.24						0.02			0.15
v/c Ratio	1.05	0.60	1.00	0.96	0.70		1.05	0.77	0.12	0.17	1.04	0.66
Uniform Delay, d1	56.9	48.7	54.9	62.1	57.1		52.9	56.9	50.2	35.3	55.9	50.8
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	59.2	0.8	46.1	47.0	3.1		54.4	5.3	0.1	0.1	41.7	3.5
Delay (s)	116.1	49.5	101.0	109.1	60.2		107.3	62.2	50.3	35.4	97.6	54.3
Level of Service	F	D	F	F	E		F	E	D	D	F	D
Approach Delay (s)		88.5			77.7			79.4			77.3	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM Average Control Delay	81.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	144.8	Sum of lost time (s)	23.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: E Brundage Lane & Chester Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	311	91	123	247	26	84	674	309	44	484	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	0.95		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	3372		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	3372		1770	3539	1583
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)	164	338	99	134	268	28	91	733	336	48	526	79
RTOR Reduction (vph)	0	0	77	0	11	0	0	61	0	0	0	52
Lane Group Flow (vph)	164	338	22	134	285	0	91	1008	0	48	526	27
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)	8.9	13.5	13.5	6.0	10.6		5.7	23.0		3.4	20.7	20.7
Effective Green, g (s)	8.9	13.5	13.5	6.0	10.6		5.7	23.0		3.4	20.7	20.7
Actuated g/C Ratio	0.14	0.22	0.22	0.10	0.17		0.09	0.37		0.06	0.34	0.34
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)	255	774	346	172	599		164	1257		98	1187	531
v/s Ratio Prot	0.09	c0.10		c0.08	0.08		c0.05	c0.30		0.03	0.15	
v/s Ratio Perm			0.01									0.02
v/c Ratio	0.64	0.44	0.06	0.78	0.48		0.55	0.80		0.49	0.44	0.05
Uniform Delay, d1	24.9	20.8	19.1	27.2	23.0		26.8	17.3		28.3	16.0	13.9
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	4.1	0.1	0.0	18.1	0.2		2.3	3.6		1.4	0.1	0.0
Delay (s)	29.0	21.0	19.1	45.3	23.3		29.1	20.9		29.7	16.1	13.9
Level of Service	C	C	B	D	C		C	C		C	B	B
Approach Delay (s)		22.9			30.1			21.5			16.8	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	11.4
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: E Brundage Lane & Chester Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	317	152	263	380	52	79	608	255	68	911	171
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	0.96		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	3382		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	3382		1770	3539	1583
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)	147	345	165	286	413	57	86	661	277	74	990	186
RTOR Reduction (vph)	0	0	137	0	12	0	0	48	0	0	0	122
Lane Group Flow (vph)	147	345	28	286	458	0	86	890	0	74	990	64
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)	9.9	12.7	12.7	15.0	17.8		5.5	25.9		5.4	25.8	25.8
Effective Green, g (s)	9.9	12.7	12.7	15.0	17.8		5.5	25.9		5.4	25.8	25.8
Actuated g/C Ratio	0.13	0.17	0.17	0.20	0.24		0.07	0.35		0.07	0.34	0.34
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)	234	601	269	355	827		130	1171		128	1221	546
v/s Ratio Prot	0.08	0.10		c0.16	c0.13		c0.05	0.26		0.04	c0.28	
v/s Ratio Perm			0.02									0.04
v/c Ratio	0.63	0.57	0.10	0.81	0.55		0.66	0.76		0.58	0.81	0.12
Uniform Delay, d1	30.7	28.6	26.2	28.5	25.0		33.7	21.7		33.6	22.3	16.7
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	3.8	0.8	0.1	11.8	0.5		9.4	2.6		3.9	4.0	0.0
Delay (s)	34.5	29.4	26.3	40.4	25.5		43.1	24.3		37.5	26.3	16.8
Level of Service	C	C	C	D	C		D	C		D	C	B
Approach Delay (s)		29.8			31.1			25.8			25.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	11.4
Intersection Capacity Utilization	67.5%	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)	284	220	30	44	234	39	39	177	56	33	71	125
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	0.90	
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	1684	
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	1770	3475		1770	3464		1157	1863	1583	1186	1684	
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)	309	239	33	48	254	42	42	192	61	36	77	136
RTOR Reduction (vph)	0	12	0	0	20	0	0	0	50	0	103	0
Lane Group Flow (vph)	309	260	0	48	276	0	42	192	11	36	110	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)	13.1	21.4		2.2	10.5		8.2	8.2	8.2	8.2	8.2	
Effective Green, g (s)	13.1	21.4		2.2	10.5		8.2	8.2	8.2	8.2	8.2	
Actuated g/C Ratio	0.29	0.47		0.05	0.23		0.18	0.18	0.18	0.18	0.18	
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)	506	1624		85	794		207	334	283	212	302	
v/s Ratio Prot	c0.17	0.07		0.03	c0.08			c0.10			0.07	
v/s Ratio Perm							0.04		0.01	0.03		
v/c Ratio	0.61	0.16		0.56	0.35		0.20	0.57	0.04	0.17	0.37	
Uniform Delay, d1	14.1	7.0		21.3	14.8		16.0	17.2	15.5	15.9	16.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.0		5.0	0.1		0.2	1.5	0.0	0.1	0.3	
Delay (s)	15.7	7.0		26.4	14.9		16.2	18.7	15.6	16.1	16.8	
Level of Service	B	A		C	B		B	B	B	B	B	
Approach Delay (s)		11.6			16.5			17.7			16.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	55.7%	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)	175	405	66	77	408	43	54	225	71	51	281	299
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	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3465		1770	3488		1770	1863	1583	1770	1719	
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00	1.00	0.58	1.00	
Satd. Flow (perm)	1770	3465		1770	3488		303	1863	1583	1085	1719	
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)	190	440	72	84	443	47	59	245	77	55	305	325
RTOR Reduction (vph)	0	18	0	0	12	0	0	0	46	0	46	0
Lane Group Flow (vph)	190	494	0	84	478	0	59	245	31	55	584	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)	9.7	18.9		5.3	14.5		25.2	25.2	25.2	25.2	25.2	
Effective Green, g (s)	9.7	18.9		5.3	14.5		25.2	25.2	25.2	25.2	25.2	
Actuated g/C Ratio	0.15	0.30		0.08	0.23		0.40	0.40	0.40	0.40	0.40	
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)	271	1033		148	798		120	740	629	431	683	
v/s Ratio Prot	c0.11	0.14		0.05	c0.14			0.13			c0.34	
v/s Ratio Perm							0.19		0.02	0.05		
v/c Ratio	0.70	0.48		0.57	0.60		0.49	0.33	0.05	0.13	0.85	
Uniform Delay, d1	25.5	18.2		27.9	21.9		14.3	13.3	11.7	12.1	17.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.5	0.1		3.0	0.8		1.2	0.1	0.0	0.0	9.8	
Delay (s)	32.0	18.3		30.9	22.7		15.5	13.3	11.7	12.2	27.2	
Level of Service	C	B		C	C		B	B	B	B	C	
Approach Delay (s)		22.0			23.9			13.4			26.0	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: E Brundage Lane & S Union ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	109	65	298	223	358	98	1428	193	94	1424	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	4994		1770	5055	
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	4994		1770	5055	
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)	122	118	71	324	242	389	107	1552	210	102	1548	64
RTOR Reduction (vph)	0	0	60	0	0	152	0	16	0	0	4	0
Lane Group Flow (vph)	122	118	11	324	242	237	107	1746	0	102	1608	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)	9.4	14.9	14.9	19.4	24.9	24.9	8.0	37.4		7.9	37.3	
Effective Green, g (s)	9.4	14.9	14.9	19.4	24.9	24.9	8.0	37.4		7.9	37.3	
Actuated g/C Ratio	0.10	0.15	0.15	0.20	0.26	0.26	0.08	0.39		0.08	0.39	
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)	172	545	244	355	910	407	146	1930		144	1948	
v/s Ratio Prot	0.07	0.03		c0.18	0.07		c0.06	c0.35		0.06	0.32	
v/s Ratio Perm			0.01			c0.15						
v/c Ratio	0.71	0.22	0.04	0.91	0.27	0.58	0.73	0.90		0.71	0.83	
Uniform Delay, d1	42.4	35.8	34.9	37.9	28.7	31.4	43.4	28.0		43.3	26.8	
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	10.4	0.5	0.2	26.5	0.4	3.5	15.0	6.7		12.2	3.4	
Delay (s)	52.8	36.3	35.1	64.4	29.0	34.9	58.4	34.8		55.5	30.2	
Level of Service	D	D	D	E	C	C	E	C		E	C	
Approach Delay (s)		42.5			43.4			36.1			31.7	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	96.8	Sum of lost time (s)	7.4
Intersection Capacity Utilization	75.1%	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)	208	195	197	283	282	332	111	1417	267	102	2101	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	0.98		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	4964		1770	5060	
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	4964		1770	5060	
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)	226	212	214	308	307	361	121	1540	290	111	2284	79
RTOR Reduction (vph)	0	0	116	0	0	121	0	20	0	0	3	0
Lane Group Flow (vph)	226	212	98	308	307	240	121	1810	0	111	2360	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)	18.5	20.5	20.5	23.3	25.3	25.3	9.3	60.9		10.6	62.2	
Effective Green, g (s)	18.5	20.5	20.5	23.3	25.3	25.3	9.3	60.9		10.6	62.2	
Actuated g/C Ratio	0.14	0.15	0.15	0.18	0.19	0.19	0.07	0.46		0.08	0.47	
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)	247	548	245	311	676	302	124	2282		142	2375	
v/s Ratio Prot	0.13	0.06		c0.17	0.09		c0.07	0.36		0.06	c0.47	
v/s Ratio Perm			0.06			c0.15						
v/c Ratio	0.91	0.39	0.40	0.99	0.45	0.79	0.98	0.79		0.78	0.99	
Uniform Delay, d1	56.2	50.3	50.5	54.5	47.5	51.1	61.5	30.4		59.8	35.0	
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	34.5	1.1	2.6	48.2	1.1	15.4	72.4	2.2		22.2	17.0	
Delay (s)	90.8	51.4	53.0	102.7	48.6	66.5	133.9	32.6		82.0	51.9	
Level of Service	F	D	D	F	D	E	F	C		F	D	
Approach Delay (s)		65.6			72.3			38.9			53.3	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	53.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	7.4
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: E Brundage Lane & Liggett Street

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	341	39	381	276	4	618	58	56	2	88	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	0.93			0.96	
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	3532		1770	1725			1794	
Flt Permitted	0.55	1.00	1.00	0.50	1.00		0.95	1.00			1.00	
Satd. Flow (perm)	1027	3539	1583	930	3532		1770	1725			1794	
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)	21	371	42	414	300	4	672	63	61	2	96	36
RTOR Reduction (vph)	0	0	24	0	1	0	0	22	0	0	10	0
Lane Group Flow (vph)	21	371	18	414	303	0	672	102	0	0	124	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)	54.9	54.9	54.9	54.9	54.9		47.8	47.8			13.3	
Effective Green, g (s)	54.9	54.9	54.9	54.9	54.9		47.8	47.8			13.3	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.37	0.37			0.10	
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)	433	1491	667	392	1488		649	633			183	
v/s Ratio Prot		0.10			0.09		c0.38	0.06			c0.07	
v/s Ratio Perm	0.02		0.01	c0.45								
v/c Ratio	0.05	0.25	0.03	1.06	0.20		1.04	0.16			0.68	
Uniform Delay, d1	22.3	24.4	22.1	37.7	23.9		41.3	27.8			56.4	
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	0.0	61.0	0.1		44.8	0.2			7.6	
Delay (s)	22.3	24.5	22.1	98.7	24.0		86.0	27.9			64.0	
Level of Service	C	C	C	F	C		F	C			E	
Approach Delay (s)		24.2			67.1			77.0			64.0	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM Average Control Delay	61.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	130.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	88.9%	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)	59	461	53	312	402	4	462	84	104	3	107	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	0.92			0.95	
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	1708			1774	
Flt Permitted	0.46	1.00	1.00	0.42	1.00		0.95	1.00			1.00	
Satd. Flow (perm)	858	3539	1583	786	3534		1770	1708			1774	
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)	64	501	58	339	437	4	502	91	113	3	116	63
RTOR Reduction (vph)	0	0	28	0	1	0	0	28	0	0	14	0
Lane Group Flow (vph)	64	501	30	339	440	0	502	176	0	0	168	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)	63.4	63.4	63.4	63.4	63.4		39.5	39.5			16.9	
Effective Green, g (s)	63.4	63.4	63.4	63.4	63.4		39.5	39.5			16.9	
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47		0.29	0.29			0.13	
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)	406	1673	748	372	1671		521	503			224	
v/s Ratio Prot		0.14			0.12		c0.28	0.10			c0.09	
v/s Ratio Perm	0.07		0.02	c0.43								
v/c Ratio	0.16	0.30	0.04	0.91	0.26		0.96	0.35			0.75	
Uniform Delay, d1	20.1	21.7	19.0	32.7	21.3		46.6	37.2			56.6	
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	0.0	26.2	0.1		30.3	0.6			11.8	
Delay (s)	20.4	21.8	19.0	59.0	21.4		76.9	37.8			68.3	
Level of Service	C	C	B	E	C		E	D			E	
Approach Delay (s)		21.4			37.7			65.6			68.3	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	134.1	Sum of lost time (s)	14.3
Intersection Capacity Utilization	81.8%	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)	72	95	69	194	137	45	59	723	146	46	693	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	1794		1770	3450		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	1794		1770	3450		1770	3539	1583
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)	78	103	75	211	149	49	64	786	159	50	753	96
RTOR Reduction (vph)	0	35	0	0	15	0	0	19	0	0	0	64
Lane Group Flow (vph)	78	143	0	211	183	0	64	926	0	50	753	32
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	5.1	10.9		11.1	16.9		3.6	22.2		3.4	22.0	22.0
Effective Green, g (s)	5.1	10.9		11.1	16.9		3.6	22.2		3.4	22.0	22.0
Actuated g/C Ratio	0.08	0.16		0.17	0.26		0.05	0.34		0.05	0.33	0.33
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)	136	287		297	458		96	1157		91	1176	526
v/s Ratio Prot	0.04	c0.08		c0.12	0.10		c0.04	c0.27		0.03	0.21	
v/s Ratio Perm												0.02
v/c Ratio	0.57	0.50		0.71	0.40		0.67	0.80		0.55	0.64	0.06
Uniform Delay, d1	29.5	25.2		26.0	20.4		30.7	20.0		30.7	18.7	15.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.6	0.5		6.5	0.2		12.7	3.8		3.6	0.9	0.0
Delay (s)	33.1	25.7		32.5	20.7		43.4	23.8		34.3	19.6	15.1
Level of Service	C	C		C	C		D	C		C	B	B
Approach Delay (s)		27.9			26.8			25.1			20.0	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	13.3
Intersection Capacity Utilization	63.4%	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)	138	207	69	152	175	39	77	950	430	58	842	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	0.95		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	3374		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	3374		1770	3539	1583
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)	150	225	75	165	190	42	84	1033	467	63	915	189
RTOR Reduction (vph)	0	12	0	0	8	0	0	47	0	0	0	94
Lane Group Flow (vph)	150	288	0	165	224	0	84	1453	0	63	915	95
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	9.1	19.0		10.1	20.0		6.2	44.8		5.4	44.0	44.0
Effective Green, g (s)	9.1	19.0		10.1	20.0		6.2	44.8		5.4	44.0	44.0
Actuated g/C Ratio	0.09	0.19		0.10	0.20		0.06	0.46		0.06	0.45	0.45
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)	165	348		183	370		112	1544		98	1591	711
v/s Ratio Prot	0.08	c0.16		c0.09	0.12		c0.05	c0.43		0.04	0.26	
v/s Ratio Perm												0.06
v/c Ratio	0.91	0.83		0.90	0.61		0.75	0.94		0.64	0.58	0.13
Uniform Delay, d1	44.0	37.9		43.4	35.4		45.1	25.3		45.3	20.0	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	43.4	14.2		39.2	1.9		21.8	11.6		10.3	0.3	0.0
Delay (s)	87.4	52.0		82.6	37.3		66.9	36.9		55.6	20.3	15.8
Level of Service	F	D		F	D		E	D		E	C	B
Approach Delay (s)		63.8			56.1			38.5			21.5	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	13.3
Intersection Capacity Utilization	82.4%	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)	55	110	43	99	84	35	87	609	66	27	335	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	0.96		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	1784		1770	1780		1770	3487		1770	3505	
Flt Permitted	0.67	1.00		0.65	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1256	1784		1214	1780		1770	3487		1770	3505	
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)	60	120	47	108	91	38	95	662	72	29	364	25
RTOR Reduction (vph)	0	27	0	0	29	0	0	10	0	0	7	0
Lane Group Flow (vph)	60	140	0	108	100	0	95	724	0	29	382	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	6.6	6.6		6.6	6.6		3.4	17.2		0.8	14.6	
Effective Green, g (s)	6.6	6.6		6.6	6.6		3.4	17.2		0.8	14.6	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.09	0.45		0.02	0.38	
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)	217	308		210	308		158	1570		37	1340	
v/s Ratio Prot		0.08			0.06		c0.05	c0.21		0.02	0.11	
v/s Ratio Perm	0.05			c0.09								
v/c Ratio	0.28	0.45		0.51	0.32		0.60	0.46		0.78	0.29	
Uniform Delay, d1	13.7	14.2		14.3	13.8		16.7	7.3		18.6	8.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		0.9	0.2		4.4	0.1		63.9	0.0	
Delay (s)	14.0	14.6		15.2	14.1		21.1	7.4		82.5	8.2	
Level of Service	B	B		B	B		C	A		F	A	
Approach Delay (s)		14.4			14.6			8.9			13.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	38.2	Sum of lost time (s)	13.6
Intersection Capacity Utilization	51.3%	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)	30	140	168	131	98	34	114	503	97	30	788	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	0.92		1.00	0.96		1.00	0.98		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	1710		1770	1791		1770	3454		1770	3512	
Flt Permitted	0.67	1.00		0.39	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1239	1710		729	1791		1770	3454		1770	3512	
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)	33	152	183	142	107	37	124	547	105	33	857	46
RTOR Reduction (vph)	0	75	0	0	21	0	0	20	0	0	6	0
Lane Group Flow (vph)	33	260	0	142	123	0	124	632	0	33	897	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		13.7	13.7		5.2	22.6		1.9	19.3	
Effective Green, g (s)	13.7	13.7		13.7	13.7		5.2	22.6		1.9	19.3	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.10	0.44		0.04	0.37	
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)	328	452		193	474		178	1507		65	1309	
v/s Ratio Prot		0.15			0.07		c0.07	c0.18		0.02	c0.26	
v/s Ratio Perm	0.03			c0.19								
v/c Ratio	0.10	0.58		0.74	0.26		0.70	0.42		0.51	0.69	
Uniform Delay, d1	14.4	16.5		17.4	15.0		22.5	10.1		24.5	13.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.1		11.8	0.1		9.2	0.1		2.3	1.2	
Delay (s)	14.4	17.6		29.2	15.1		31.7	10.1		26.8	14.9	
Level of Service	B	B		C	B		C	B		C	B	
Approach Delay (s)		17.3			22.1			13.6			15.3	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
10: 4TH Street & P Street

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	58	38	32	65	28	39	356	22	25	231	22
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	1846		1770	1838	
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	0.59	1.00		0.52	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1863	1583	1100	1846		971	1838	
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)	30	63	41	35	71	30	42	387	24	27	251	24
RTOR Reduction (vph)	0	0	35	0	0	26	0	5	0	0	7	0
Lane Group Flow (vph)	30	63	6	35	71	4	42	406	0	27	268	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	7.7	7.7		7.7	7.7	
Effective Green, g (s)	2.9	2.9	2.9	2.9	2.9	2.9	7.7	7.7		7.7	7.7	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.38	0.38		0.38	0.38	
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)	270	270	230	270	270	230	424	711		374	708	
v/s Ratio Prot		0.03			c0.04			c0.22			0.15	
v/s Ratio Perm	0.02		0.00	0.02		0.00	0.04			0.03		
v/c Ratio	0.11	0.23	0.03	0.13	0.26	0.02	0.10	0.57		0.07	0.38	
Uniform Delay, d1	7.4	7.6	7.3	7.5	7.6	7.3	3.9	4.8		3.9	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	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.7		0.0	0.1	
Delay (s)	7.5	7.7	7.4	7.5	7.8	7.3	4.0	5.5		3.9	4.5	
Level of Service	A	A	A	A	A	A	A	A		A	A	
Approach Delay (s)		7.6			7.6			5.4			4.5	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	20.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	43.8%	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)	60	104	52	34	125	20	35	356	40	32	521	50
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	0.98		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	1863	1583	1770	1863	1583	1770	1835		1770	1838	
Flt Permitted	0.71	1.00	1.00	0.71	1.00	1.00	0.35	1.00		0.51	1.00	
Satd. Flow (perm)	1331	1863	1583	1331	1863	1583	649	1835		954	1838	
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)	65	113	57	37	136	22	38	387	43	35	566	54
RTOR Reduction (vph)	0	0	47	0	0	18	0	6	0	0	6	0
Lane Group Flow (vph)	65	113	10	37	136	4	38	424	0	35	614	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)	5.6	5.6	5.6	5.6	5.6	5.6	15.8	15.8		15.8	15.8	
Effective Green, g (s)	5.6	5.6	5.6	5.6	5.6	5.6	15.8	15.8		15.8	15.8	
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.51	0.51		0.51	0.51	
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)	242	339	288	242	339	288	333	941		489	943	
v/s Ratio Prot		0.06			c0.07			0.23			c0.33	
v/s Ratio Perm	0.05		0.01	0.03		0.00	0.06			0.04		
v/c Ratio	0.27	0.33	0.04	0.15	0.40	0.01	0.11	0.45		0.07	0.65	
Uniform Delay, d1	10.8	11.0	10.4	10.6	11.1	10.3	3.9	4.7		3.8	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	0.2	0.0	0.1	0.3	0.0	0.1	0.1		0.0	1.2	
Delay (s)	11.1	11.2	10.4	10.7	11.4	10.3	3.9	4.9		3.8	6.7	
Level of Service	B	B	B	B	B	B	A	A		A	A	
Approach Delay (s)		11.0			11.2			4.8			6.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	30.8	Sum of lost time (s)	9.4
Intersection Capacity Utilization	51.9%	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)	55	69	54	91	76	56	66	1763	39	47	1478	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			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1740			1764		1770	5069		1770	5037	
Flt Permitted	0.53	1.00			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	983	1740			1453		1770	5069		1770	5037	
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)	60	75	59	99	83	61	72	1916	42	51	1607	108
RTOR Reduction (vph)	0	42	0	0	18	0	0	2	0	0	6	0
Lane Group Flow (vph)	60	92	0	0	225	0	72	1956	0	51	1709	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.6	12.6			12.9		4.2	33.6		3.9	33.3	
Effective Green, g (s)	12.6	12.6			12.9		4.2	33.6		3.9	33.3	
Actuated g/C Ratio	0.20	0.20			0.20		0.07	0.53		0.06	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)	196	347			297		118	2695		109	2654	
v/s Ratio Prot		0.05					c0.04	c0.39		0.03	0.34	
v/s Ratio Perm	0.06				c0.15							
v/c Ratio	0.31	0.26			0.76		0.61	0.73		0.47	0.64	
Uniform Delay, d1	21.6	21.4			23.7		28.7	11.3		28.6	10.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1			9.4		6.4	1.4		1.2	0.8	
Delay (s)	21.9	21.5			33.0		35.1	12.6		29.8	11.5	
Level of Service	C	C			C		D	B		C	B	
Approach Delay (s)		21.6			33.0			13.4			12.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	7.9
Intersection Capacity Utilization	74.0%	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)	77	106	36	104	54	68	74	1739	67	169	2110	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			0.96		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1792			1747		1770	5057		1770	5061	
Flt Permitted	0.52	1.00			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	972	1792			1250		1770	5057		1770	5061	
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)	84	115	39	113	59	74	80	1890	73	184	2293	76
RTOR Reduction (vph)	0	15	0	0	19	0	0	3	0	0	3	0
Lane Group Flow (vph)	84	139	0	0	227	0	80	1960	0	184	2366	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	15.1	15.1			15.4		6.1	40.5		11.2	45.6	
Effective Green, g (s)	15.1	15.1			15.4		6.1	40.5		11.2	45.6	
Actuated g/C Ratio	0.19	0.19			0.19		0.08	0.51		0.14	0.57	
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)	184	339			241		135	2563		248	2888	
v/s Ratio Prot		0.08					0.05	0.39		c0.10	c0.47	
v/s Ratio Perm	0.09				c0.18							
v/c Ratio	0.46	0.41			0.94		0.59	0.76		0.74	0.82	
Uniform Delay, d1	28.8	28.5			31.8		35.7	15.9		33.0	13.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.3			41.3		4.6	1.8		10.0	2.3	
Delay (s)	29.4	28.8			73.1		40.3	17.6		43.0	16.1	
Level of Service	C	C			E		D	B		D	B	
Approach Delay (s)		29.0			73.1			18.5			18.0	
Approach LOS		C			E			B			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	7.9
Intersection Capacity Utilization	82.5%	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)	23	26	5	21	26	69	2	707	27	48	339	19
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	0.89		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	1820		1770	1659		1770	3520		1770	3511	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1863	1820		1863	1659		1770	3520		1770	3511	
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)	25	28	5	23	28	75	2	768	29	52	368	21
RTOR Reduction (vph)	0	5	0	0	68	0	0	3	0	0	5	0
Lane Group Flow (vph)	25	28	0	23	35	0	2	794	0	52	384	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	3.0	3.0		3.0	3.0		1.5	15.9		1.7	16.1	
Effective Green, g (s)	3.0	3.0		3.0	3.0		1.5	15.9		1.7	16.1	
Actuated g/C Ratio	0.09	0.09		0.09	0.09		0.04	0.46		0.05	0.47	
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)	163	160		163	146		78	1636		88	1653	
v/s Ratio Prot		0.02			c0.02		0.00	c0.23		c0.03	0.11	
v/s Ratio Perm	0.01			0.01								
v/c Ratio	0.15	0.18		0.14	0.24		0.03	0.49		0.59	0.23	
Uniform Delay, d1	14.4	14.5		14.4	14.5		15.7	6.3		15.9	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.1	0.3		0.0	0.1		6.9	0.0	
Delay (s)	14.6	14.7		14.6	14.8		15.7	6.4		22.8	5.4	
Level of Service	B	B		B	B		B	A		C	A	
Approach Delay (s)		14.6			14.8			6.4			7.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	34.2	Sum of lost time (s)	13.6
Intersection Capacity Utilization	44.7%	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)	40	38	18	58	27	91	15	608	27	84	727	54
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	0.88		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	1771		1770	1647		1770	3517		1770	3502	
Flt Permitted	0.80	1.00		0.80	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1490	1771		1490	1647		1770	3517		1770	3502	
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)	43	41	20	63	29	99	16	661	29	91	790	59
RTOR Reduction (vph)	0	17	0	0	86	0	0	4	0	0	7	0
Lane Group Flow (vph)	43	44	0	63	42	0	16	686	0	91	842	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	5.0	5.0		5.0	5.0		1.1	15.8		3.3	18.0	
Effective Green, g (s)	5.0	5.0		5.0	5.0		1.1	15.8		3.3	18.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.03	0.42		0.09	0.48	
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)	198	235		198	218		52	1474		155	1672	
v/s Ratio Prot		0.02			0.03		0.01	c0.20		0.05	c0.24	
v/s Ratio Perm	0.03			c0.04								
v/c Ratio	0.22	0.19		0.32	0.19		0.31	0.47		0.59	0.50	
Uniform Delay, d1	14.6	14.5		14.8	14.6		17.9	7.9		16.5	6.8	
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		0.3	0.2		1.2	0.1		3.6	0.1	
Delay (s)	14.8	14.7		15.1	14.7		19.2	8.0		20.2	6.9	
Level of Service	B	B		B	B		B	A		C	A	
Approach Delay (s)		14.7			14.9			8.2			8.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.7	Sum of lost time (s)	9.6
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												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	48	35	3	9	46	43	13	392	11	35	198	13
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	0.92
Hourly flow rate (vph)	52	38	3	10	50	47	14	426	12	38	215	14

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	93	107	14	438	38	229
Volume Left (vph)	52	10	14	0	38	0
Volume Right (vph)	3	47	0	12	0	14
Hadj (s)	0.12	-0.21	0.53	0.01	0.53	-0.01
Departure Headway (s)	6.1	5.7	6.0	5.5	6.2	5.6
Degree Utilization, x	0.16	0.17	0.02	0.66	0.07	0.36
Capacity (veh/h)	520	551	581	637	555	612
Control Delay (s)	10.2	9.9	7.9	17.4	8.4	10.5
Approach Delay (s)	10.2	9.9	17.1		10.2	
Approach LOS	B	A	C		B	

Intersection Summary			
Delay	13.6		
HCM Level of Service	B		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	42	58	21	32	65	56	17	412	22	71	578	66
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	0.92
Hourly flow rate (vph)	46	63	23	35	71	61	18	448	24	77	628	72

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	132	166	18	472	77	700
Volume Left (vph)	46	35	18	0	77	0
Volume Right (vph)	23	61	0	24	0	72
Hadj (s)	0.00	-0.14	0.53	0.00	0.53	-0.04
Departure Headway (s)	7.5	7.2	7.1	6.6	7.0	6.5
Degree Utilization, x	0.27	0.33	0.04	0.87	0.15	1.26
Capacity (veh/h)	446	463	492	537	498	563
Control Delay (s)	13.3	13.8	9.2	37.3	10.1	149.0
Approach Delay (s)	13.3	13.8	36.2		135.2	
Approach LOS	B	B	E		F	

Intersection Summary			
Delay	81.1		
HCM Level of Service	F		
Intersection Capacity Utilization	58.8%	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 (vph)	114	1128	91	116	919	194	134	75	344	264	343	1007
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	5028		1770	5085	1583	1770	1863	2787	1770	1633	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	5028		1770	5085	1583	1770	1863	2787	1770	1633	1504
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)	124	1226	99	126	999	211	146	82	374	287	373	1095
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	343	0	32	167
Lane Group Flow (vph)	124	1317	0	126	999	211	146	82	31	287	735	534
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)	10.6	33.7		8.3	31.4	120.0	10.0	10.0	10.0	51.0	51.0	51.0
Effective Green, g (s)	10.6	33.7		8.3	31.4	120.0	10.0	10.0	10.0	51.0	51.0	51.0
Actuated g/C Ratio	0.09	0.28		0.07	0.26	1.00	0.08	0.08	0.08	0.42	0.42	0.42
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)	156	1412		122	1331	1583	148	155	232	752	694	639
v/s Ratio Prot	0.07	c0.26		c0.07	0.20		c0.08	0.04		0.16	c0.45	
v/s Ratio Perm						0.13			0.01			0.36
v/c Ratio	0.79	0.93		1.03	0.75	0.13	0.99	0.53	0.13	0.38	1.06	0.84
Uniform Delay, d1	53.6	42.0		55.8	40.7	0.0	54.9	52.7	51.0	23.7	34.5	30.8
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	22.3	11.6		90.5	2.7	0.2	69.6	5.1	0.5	1.2	51.1	11.2
Delay (s)	76.0	53.6		146.4	43.4	0.2	124.5	57.9	51.4	24.8	85.6	42.0
Level of Service	E	D		F	D	A	F	E	D	C	F	D
Approach Delay (s)		55.5			46.3			70.1			58.2	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	55.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.7%	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)	500	1480	243	188	1143	571	146	125	291	291	546	1193
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	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	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	4978		1770	5085	1583	1770	1863	2787	1770	1662	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	4978		1770	5085	1583	1770	1863	2787	1770	1662	1504
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)	543	1609	264	204	1242	621	159	136	316	316	593	1297
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	291	0	17	298
Lane Group Flow (vph)	543	1857	0	204	1242	621	159	136	25	316	978	597
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)	27.3	42.7		13.3	28.7	140.0	11.0	11.0	11.0	56.0	56.0	56.0
Effective Green, g (s)	27.3	42.7		13.3	28.7	140.0	11.0	11.0	11.0	56.0	56.0	56.0
Actuated g/C Ratio	0.20	0.30		0.10	0.20	1.00	0.08	0.08	0.08	0.40	0.40	0.40
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)	345	1518		168	1042	1583	139	146	219	708	665	602
v/s Ratio Prot	c0.31	c0.37		0.12	c0.24		c0.09	0.07		0.18	c0.59	
v/s Ratio Perm						0.39			0.01			0.40
v/c Ratio	1.57	1.22		1.21	1.19	0.39	1.14	0.93	0.11	0.45	1.47	0.99
Uniform Delay, d1	56.4	48.6		63.4	55.6	0.0	64.5	64.1	60.0	30.7	42.0	41.8
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	271.9	106.6		138.7	96.0	0.7	120.2	55.1	0.4	1.6	219.7	34.8
Delay (s)	328.2	155.3		202.0	151.7	0.7	184.7	119.2	60.4	32.3	261.7	76.6
Level of Service	F	F		F	F	A	F	F	E	C	F	E
Approach Delay (s)		194.1			111.3			105.8			153.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	151.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.7
Intersection Capacity Utilization	125.3%	ICU Level of Service	H
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	1213	1003	0	1186	23	479	16	653	31	0	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9	4.0		5.3	5.3	4.6	4.6	4.6	3.7		3.7
Lane Util. Factor	1.00	0.91	1.00		0.91	1.00	0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	0.96	1.00	0.95		1.00
Satd. Flow (prot)	1770	5085	1583		5085	1583	1681	1690	1583	1770		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	0.96	1.00	0.63		1.00
Satd. Flow (perm)	1770	5085	1583		5085	1583	1681	1690	1583	1183		1583
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)	11	1318	1090	0	1289	25	521	17	710	34	0	37
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	87	0	0	35
Lane Group Flow (vph)	11	1318	1090	0	1289	14	271	267	623	34	0	2
Turn Type	Prot		Free			Prot	Split		Perm	custom		custom
Protected Phases	5	2			6	6	3	3				
Permitted Phases			Free						3	4		4
Actuated Green, G (s)	1.2	39.3	94.9		34.0	34.0	36.1	36.1	36.1	6.3		6.3
Effective Green, g (s)	1.2	39.3	94.9		34.0	34.0	36.1	36.1	36.1	6.3		6.3
Actuated g/C Ratio	0.01	0.41	1.00		0.36	0.36	0.38	0.38	0.38	0.07		0.07
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	2106	1583		1822	567	639	643	602	79		105
v/s Ratio Prot	0.01	0.26			0.25	0.01	0.16	0.16				
v/s Ratio Perm			c0.69						c0.39	0.03		0.00
v/c Ratio	0.50	0.63	0.69		0.71	0.02	0.42	0.42	1.04	0.43		0.02
Uniform Delay, d1	46.6	22.0	0.0		26.2	19.7	21.7	21.6	29.4	42.6		41.4
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	6.4	0.8	2.5		1.4	0.0	1.0	0.9	46.1	1.4		0.0
Delay (s)	52.9	22.8	2.5		27.6	19.7	22.7	22.5	75.5	43.9		41.5
Level of Service	D	C	A		C	B	C	C	E	D		D
Approach Delay (s)		13.8			27.4			52.7			42.6	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	4.6
Intersection Capacity Utilization	78.5%	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)	69	1127	1202	0	2096	68	301	9	564	55	0	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	4.9	4.0		5.3	5.3	4.6	4.6	4.6	3.7		3.7
Lane Util. Factor	1.00	0.91	1.00		0.91	1.00	0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	0.96	1.00	0.95		1.00
Satd. Flow (prot)	1770	5085	1583		5085	1583	1681	1690	1583	1770		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	0.96	1.00	0.64		1.00
Satd. Flow (perm)	1770	5085	1583		5085	1583	1681	1690	1583	1200		1583
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)	75	1225	1307	0	2278	74	327	10	613	60	0	80
RTOR Reduction (vph)	0	0	0	0	0	14	0	0	48	0	0	75
Lane Group Flow (vph)	75	1225	1307	0	2278	60	167	170	565	60	0	5
Turn Type	Prot		Free			Prot	Split		Perm	custom		custom
Protected Phases	5	2			6	6	3	3				
Permitted Phases			Free						3	4		4
Actuated Green, G (s)	8.0	75.8	144.6		63.7	63.7	47.4	47.4	47.4	8.2		8.2
Effective Green, g (s)	8.0	75.8	144.6		63.7	63.7	47.4	47.4	47.4	8.2		8.2
Actuated g/C Ratio	0.06	0.52	1.00		0.44	0.44	0.33	0.33	0.33	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)	98	2666	1583		2240	697	551	554	519	68		90
v/s Ratio Prot	0.04	0.24			c0.45	0.04	0.10	0.10				
v/s Ratio Perm			c0.83						c0.36	0.05		0.00
v/c Ratio	0.77	0.46	0.83		1.02	0.09	0.30	0.31	1.09	0.88		0.05
Uniform Delay, d1	67.4	21.6	0.0		40.4	23.5	36.3	36.3	48.6	67.7		64.5
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	26.8	0.3	5.1		23.4	0.1	0.7	0.7	65.5	68.1		0.1
Delay (s)	94.1	21.8	5.1		63.8	23.6	36.9	37.0	114.1	135.8		64.6
Level of Service	F	C	A		E	C	D	D	F	F		E
Approach Delay (s)		15.5			62.6			86.7			95.1	
Approach LOS		B			E			F			F	

Intersection Summary			
HCM Average Control Delay	46.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	144.6	Sum of lost time (s)	9.9
Intersection Capacity Utilization	72.3%	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)	765	977	116	49	522	118	229	485	74	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	4985		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	4985		1770	3203	1441
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)	832	1062	126	53	567	128	249	527	80	98	228	296
RTOR Reduction (vph)	0	0	68	0	0	99	0	16	0	0	63	140
Lane Group Flow (vph)	832	1062	58	53	567	29	249	591	0	98	298	23
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)	30.0	40.9	40.9	7.1	18.0	18.0	18.0	18.0		14.5	14.5	14.5
Effective Green, g (s)	30.0	40.9	40.9	7.1	18.0	18.0	18.0	18.0		14.5	14.5	14.5
Actuated g/C Ratio	0.30	0.41	0.41	0.07	0.18	0.18	0.18	0.18		0.14	0.14	0.14
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)	1024	1439	644	242	910	283	614	892		255	462	208
v/s Ratio Prot	c0.24	c0.30		0.02	c0.11		0.07	c0.12		0.06	c0.09	
v/s Ratio Perm			0.04			0.02						0.02
v/c Ratio	0.81	0.74	0.09	0.22	0.62	0.10	0.41	0.66		0.38	0.64	0.11
Uniform Delay, d1	32.7	25.3	18.4	44.1	38.2	34.6	36.6	38.5		39.0	40.6	37.5
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	4.7	1.7	0.0	0.2	1.0	0.1	0.2	1.4		0.4	2.3	0.1
Delay (s)	37.4	27.0	18.4	44.3	39.1	34.6	36.7	39.9		39.4	42.9	37.5
Level of Service	D	C	B	D	D	C	D	D		D	D	D
Approach Delay (s)		30.8			38.7			39.0			41.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	15.2
Intersection Capacity Utilization	66.4%	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)	503	760	206	169	923	104	278	527	56	134	746	685
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	0.99		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	5012		1770	3264	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	5012		1770	3264	1441
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)	547	826	224	184	1003	113	302	573	61	146	811	745
RTOR Reduction (vph)	0	0	154	0	0	44	0	10	0	0	21	263
Lane Group Flow (vph)	547	826	70	184	1003	69	302	624	0	146	1058	214
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)	20.4	34.4	34.4	12.2	26.2	26.2	22.1	22.1		40.7	40.7	40.7
Effective Green, g (s)	20.4	34.4	34.4	12.2	26.2	26.2	22.1	22.1		40.7	40.7	40.7
Actuated g/C Ratio	0.16	0.27	0.27	0.09	0.20	0.20	0.17	0.17		0.31	0.31	0.31
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)	541	940	421	323	1029	320	586	855		556	1026	453
v/s Ratio Prot	c0.16	0.23		0.05	c0.20		0.09	c0.12		0.08	c0.32	
v/s Ratio Perm			0.04			0.04						0.15
v/c Ratio	1.01	0.88	0.17	0.57	0.97	0.22	0.52	0.73		0.26	1.03	0.47
Uniform Delay, d1	54.6	45.6	36.5	56.1	51.3	43.1	48.8	50.9		33.2	44.4	35.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	41.5	9.1	0.1	1.4	21.8	0.1	0.3	2.7		0.1	36.3	0.3
Delay (s)	96.0	54.7	36.6	57.5	73.2	43.2	49.1	53.5		33.3	80.7	36.0
Level of Service	F	D	D	E	E	D	D	D		C	F	D
Approach Delay (s)		66.3			68.4			52.1			64.1	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM Average Control Delay	63.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	129.5	Sum of lost time (s)	20.1
Intersection Capacity Utilization	84.8%	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 (vph)	284	853	49	50	482	135	55	69	95	30	40	188
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	0.97		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	3511		1770	4918		1770	1701		1770	1632	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3511		1770	4918		1770	1701		1770	1632	
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)	309	927	53	54	524	147	60	75	103	33	43	204
RTOR Reduction (vph)	0	4	0	0	60	0	0	73	0	0	178	0
Lane Group Flow (vph)	309	976	0	54	611	0	60	105	0	33	69	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.1	25.8		3.5	15.2		4.8	9.9		2.1	7.7	
Effective Green, g (s)	14.1	25.8		3.5	15.2		4.8	9.9		2.1	7.7	
Actuated g/C Ratio	0.24	0.43		0.06	0.26		0.08	0.17		0.04	0.13	
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)	419	1520		104	1254		143	283		62	211	
v/s Ratio Prot	c0.17	c0.28		0.03	0.12		0.03	c0.06		0.02	c0.04	
v/s Ratio Perm												
v/c Ratio	0.74	0.64		0.52	0.49		0.42	0.37		0.53	0.33	
Uniform Delay, d1	21.0	13.3		27.2	18.9		26.1	22.1		28.3	23.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.8	0.7		1.8	0.1		0.7	0.3		4.3	0.3	
Delay (s)	26.8	14.0		29.0	19.0		26.8	22.4		32.6	23.9	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		17.0			19.7			23.5			25.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	8.5
Intersection Capacity Utilization	63.7%	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)	76	753	63	85	1101	10	61	12	57	3	25	65
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	0.88		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	5078		1770	1632		1770	1660	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3498		1770	5078		1770	1632		1770	1660	
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)	83	818	68	92	1197	11	66	13	62	3	27	71
RTOR Reduction (vph)	0	7	0	0	1	0	0	52	0	0	65	0
Lane Group Flow (vph)	83	879	0	92	1207	0	66	23	0	3	33	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	4.9	21.2		4.9	21.2		5.1	8.3		0.9	4.6	
Effective Green, g (s)	4.9	21.2		4.9	21.2		5.1	8.3		0.9	4.6	
Actuated g/C Ratio	0.09	0.40		0.09	0.40		0.10	0.15		0.02	0.09	
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)	162	1384		162	2008		168	253		30	142	
v/s Ratio Prot	0.05	c0.25		c0.05	0.24		c0.04	c0.01		0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.51	0.64		0.57	0.60		0.39	0.09		0.10	0.23	
Uniform Delay, d1	23.2	13.1		23.3	12.8		22.8	19.4		26.0	22.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.7		2.7	0.4		0.6	0.1		0.5	0.3	
Delay (s)	24.3	13.8		26.0	13.2		23.3	19.5		26.5	23.2	
Level of Service	C	B		C	B		C	B		C	C	
Approach Delay (s)		14.7			14.1			21.3			23.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	22.3
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1015	19	98	488	45	72
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)	5071		1770	5085	1676	
Flt Permitted	1.00		0.95	1.00	0.98	
Satd. Flow (perm)	5071		1770	5085	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1103	21	107	530	49	78
RTOR Reduction (vph)	2	0	0	0	68	0
Lane Group Flow (vph)	1122	0	107	530	59	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	17.5		3.4	24.9	4.8	
Effective Green, g (s)	17.5		3.4	24.9	4.8	
Actuated g/C Ratio	0.45		0.09	0.64	0.12	
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)	2293		156	3272	208	
v/s Ratio Prot	c0.22		c0.06	0.10	c0.04	
v/s Ratio Perm						
v/c Ratio	0.49		0.69	0.16	0.28	
Uniform Delay, d1	7.5		17.1	2.7	15.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.2		9.5	0.0	0.3	
Delay (s)	7.7		26.7	2.8	15.7	
Level of Service	A		C	A	B	
Approach Delay (s)	7.7			6.8	15.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	754	68	107	1104	35	85
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	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	5022		1770	5085	1661	
Flt Permitted	1.00		0.95	1.00	0.99	
Satd. Flow (perm)	5022		1770	5085	1661	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	820	74	116	1200	38	92
RTOR Reduction (vph)	12	0	0	0	81	0
Lane Group Flow (vph)	882	0	116	1200	49	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	16.7		4.8	25.5	4.6	
Effective Green, g (s)	16.7		4.8	25.5	4.6	
Actuated g/C Ratio	0.43		0.12	0.65	0.12	
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)	2145		217	3316	195	
v/s Ratio Prot	0.18		c0.07	c0.24	c0.03	
v/s Ratio Perm						
v/c Ratio	0.41		0.53	0.36	0.25	
Uniform Delay, d1	7.8		16.1	3.1	15.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.2		1.3	0.1	0.2	
Delay (s)	8.0		17.4	3.2	15.9	
Level of Service	A		B	A	B	
Approach Delay (s)	8.0			4.4	15.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	8.0
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)	109	847	60	155	462	60	90	468	136	80	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	0.98		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	5035		1770	4998		1770	3420		1770	3366	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5035		1770	4998		1770	3420		1770	3366	
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)	118	921	65	168	502	65	98	509	148	87	239	116
RTOR Reduction (vph)	0	8	0	0	17	0	0	33	0	0	75	0
Lane Group Flow (vph)	118	978	0	168	550	0	98	624	0	87	280	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.6	20.8		10.2	19.4		11.2	20.2		6.5	15.5	
Effective Green, g (s)	11.6	20.8		10.2	19.4		11.2	20.2		6.5	15.5	
Actuated g/C Ratio	0.15	0.28		0.14	0.26		0.15	0.27		0.09	0.21	
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)	272	1387		239	1284		263	915		152	691	
v/s Ratio Prot	0.07	c0.19		c0.09	0.11		0.06	c0.18		c0.05	0.08	
v/s Ratio Perm												
v/c Ratio	0.43	0.71		0.70	0.43		0.37	0.68		0.57	0.40	
Uniform Delay, d1	29.0	24.6		31.2	23.4		29.0	24.8		33.2	26.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.4		7.4	0.1		0.3	1.7		3.2	0.1	
Delay (s)	29.4	25.9		38.6	23.5		29.3	26.5		36.4	26.1	
Level of Service	C	C		D	C		C	C		D	C	
Approach Delay (s)		26.3			27.0			26.8			28.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	17.8
Intersection Capacity Utilization	65.1%	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)	154	866	81	279	893	66	77	491	353	118	709	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	0.94		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	5020		1770	5033		1770	3317		1770	3467	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5020		1770	5033		1770	3317		1770	3467	
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)	167	941	88	303	971	72	84	534	384	128	771	122
RTOR Reduction (vph)	0	12	0	0	9	0	0	149	0	0	14	0
Lane Group Flow (vph)	167	1017	0	303	1034	0	84	769	0	128	879	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.5	18.3		14.1	20.9		9.3	28.2		8.7	27.6	
Effective Green, g (s)	11.5	18.3		14.1	20.9		9.3	28.2		8.7	27.6	
Actuated g/C Ratio	0.13	0.21		0.16	0.24		0.11	0.32		0.10	0.32	
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)	234	1055		287	1208		189	1074		177	1099	
v/s Ratio Prot	0.09	c0.20		c0.17	0.21		0.05	c0.23		0.07	c0.25	
v/s Ratio Perm												
v/c Ratio	0.71	0.96		1.06	0.86		0.44	0.72		0.72	0.80	
Uniform Delay, d1	36.2	34.1		36.5	31.7		36.5	25.9		38.0	27.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.3	19.4		68.6	5.9		0.6	1.9		11.7	4.0	
Delay (s)	44.5	53.4		105.1	37.6		37.1	27.8		49.7	31.2	
Level of Service	D	D		F	D		D	C		D	C	
Approach Delay (s)		52.2			52.8			28.6			33.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	13.8
Intersection Capacity Utilization	82.0%	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)	354	616	45	63	358	58	102	492	149	72	305	127
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	3503		3433	4979		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	3503		3433	4979		1770	3539	1583	1770	3539	1583
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)	385	670	49	68	389	63	111	535	162	78	332	138
RTOR Reduction (vph)	0	6	0	0	29	0	0	0	123	0	0	113
Lane Group Flow (vph)	385	713	0	68	423	0	111	535	39	78	332	25
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)	14.5	22.0		2.8	10.3		8.5	15.0	15.0	5.0	11.5	11.5
Effective Green, g (s)	14.5	22.0		2.8	10.3		8.5	15.0	15.0	5.0	11.5	11.5
Actuated g/C Ratio	0.23	0.35		0.04	0.17		0.14	0.24	0.24	0.08	0.18	0.18
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)	799	1237		154	823		241	852	381	142	653	292
v/s Ratio Prot	0.11	c0.20		0.02	c0.08		c0.06	c0.15		0.04	0.09	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.48	0.58		0.44	0.51		0.46	0.63	0.10	0.55	0.51	0.09
Uniform Delay, d1	20.7	16.4		29.0	23.7		24.8	21.2	18.4	27.6	22.9	21.1
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	0.2	0.4		0.7	0.2		0.5	1.0	0.0	2.3	0.2	0.0
Delay (s)	20.8	16.8		29.7	23.9		25.3	22.2	18.5	29.9	23.1	21.1
Level of Service	C	B		C	C		C	C	B	C	C	C
Approach Delay (s)		18.2			24.7			21.9			23.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	18.1
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)	283	737	97	211	874	87	104	449	136	99	688	263
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	0.98		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	3478		3433	5016		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	3478		3433	5016		1770	3539	1583	1770	3539	1583
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)	308	801	105	229	950	95	113	488	148	108	748	286
RTOR Reduction (vph)	0	12	0	0	14	0	0	0	114	0	0	205
Lane Group Flow (vph)	308	894	0	229	1031	0	113	488	34	108	748	81
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)	10.1	24.0		7.5	21.4		5.7	17.3	17.3	10.1	21.7	21.7
Effective Green, g (s)	10.1	24.0		7.5	21.4		5.7	17.3	17.3	10.1	21.7	21.7
Actuated g/C Ratio	0.13	0.31		0.10	0.28		0.07	0.23	0.23	0.13	0.28	0.28
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)	454	1093		337	1405		132	801	358	234	1005	450
v/s Ratio Prot	0.09	c0.26		0.07	c0.21		c0.06	0.14		c0.06	c0.21	
v/s Ratio Perm									0.02			0.05
v/c Ratio	0.68	0.82		0.68	0.73		0.86	0.61	0.09	0.46	0.74	0.18
Uniform Delay, d1	31.6	24.2		33.3	24.9		34.9	26.5	23.4	30.6	24.8	20.6
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	3.2	4.6		4.2	1.7		37.5	0.9	0.0	0.5	2.6	0.1
Delay (s)	34.8	28.8		37.5	26.7		72.4	27.4	23.4	31.2	27.5	20.7
Level of Service	C	C		D	C		E	C	C	C	C	C
Approach Delay (s)		30.3			28.6			33.4			26.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	22.1
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)	35	635	5	17	459	17	4	3	1	6	6	17
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	0.99		1.00	0.96		1.00	0.93	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	5080		1770	5059		1770	1793		1770	1647	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	5080		1770	5059		1863	1793		1863	1647	1504
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)	38	690	5	18	499	18	4	3	1	7	7	18
RTOR Reduction (vph)	0	1	0	0	4	0	0	1	0	0	6	12
Lane Group Flow (vph)	38	694	0	18	513	0	4	3	0	7	7	0
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	0.6	11.5		0.5	11.4		0.5	0.5		0.5	0.5	0.5
Effective Green, g (s)	0.6	11.5		0.5	11.4		0.5	0.5		0.5	0.5	0.5
Actuated g/C Ratio	0.02	0.45		0.02	0.45		0.02	0.02		0.02	0.02	0.02
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)	42	2300		35	2271		37	35		37	32	30
v/s Ratio Prot	c0.02	c0.14		0.01	0.10			0.00			c0.00	
v/s Ratio Perm							0.00			0.00		0.00
v/c Ratio	0.90	0.30		0.51	0.23		0.11	0.09		0.19	0.22	0.01
Uniform Delay, d1	12.4	4.4		12.3	4.3		12.2	12.2		12.3	12.3	12.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	100.1	0.0		5.2	0.0		0.5	0.4		0.9	1.3	0.0
Delay (s)	112.5	4.4		17.5	4.3		12.7	12.6		13.2	13.5	12.2
Level of Service	F	A		B	A		B	B		B	B	B
Approach Delay (s)		10.0			4.8			12.7			13.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	25.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.4%	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)	51	906	10	12	825	16	1	34	14	15	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	0.98	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	5071		1770	1782		1770	1742	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	5071		1863	1782		1863	1742	1504
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)	55	985	11	13	897	17	1	37	15	16	26	25
RTOR Reduction (vph)	0	1	0	0	2	0	0	14	0	0	3	20
Lane Group Flow (vph)	55	995	0	13	912	0	1	38	0	16	26	2
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	15.9		0.6	14.9		2.6	2.6		2.6	2.6	2.6
Effective Green, g (s)	1.6	15.9		0.6	14.9		2.6	2.6		2.6	2.6	2.6
Actuated g/C Ratio	0.05	0.50		0.02	0.47		0.08	0.08		0.08	0.08	0.08
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)	89	2523		33	2361		151	145		151	142	122
v/s Ratio Prot	c0.03	c0.20		0.01	0.18			c0.02			0.02	
v/s Ratio Perm							0.00			0.01		0.00
v/c Ratio	0.62	0.39		0.39	0.39		0.01	0.26		0.11	0.18	0.01
Uniform Delay, d1	14.9	5.0		15.5	5.6		13.5	13.8		13.6	13.7	13.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.7	0.0		2.8	0.0		0.0	0.4		0.1	0.2	0.0
Delay (s)	23.6	5.1		18.3	5.6		13.5	14.2		13.7	13.9	13.5
Level of Service	C	A		B	A		B	B		B	B	B
Approach Delay (s)		6.0			5.8			14.1			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	32.0	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)	176	436	25	126	420	134	31	334	146	36	116	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	0.96		1.00	0.95		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	5044		1770	4901		1770	1778		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	5044		1770	4901		1770	1778		1770	1863	1583
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)	191	474	27	137	457	146	34	363	159	39	126	60
RTOR Reduction (vph)	0	8	0	0	71	0	0	19	0	0	0	38
Lane Group Flow (vph)	191	493	0	137	532	0	34	503	0	39	126	22
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	6.8	12.7		7.9	13.8		2.0	22.8		3.1	23.9	23.9
Effective Green, g (s)	6.8	12.7		7.9	13.8		2.0	22.8		3.1	23.9	23.9
Actuated g/C Ratio	0.11	0.20		0.12	0.22		0.03	0.36		0.05	0.37	0.37
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)	364	999		218	1055		55	632		86	695	590
v/s Ratio Prot	0.06	0.10		c0.08	c0.11		0.02	c0.28		c0.02	0.07	
v/s Ratio Perm												0.01
v/c Ratio	0.52	0.49		0.63	0.50		0.62	0.80		0.45	0.18	0.04
Uniform Delay, d1	27.1	22.8		26.7	22.1		30.7	18.6		29.7	13.5	12.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1		4.0	0.1		13.6	6.5		1.4	0.0	0.0
Delay (s)	27.8	23.0		30.7	22.3		44.3	25.0		31.1	13.6	12.8
Level of Service	C	C		C	C		D	C		C	B	B
Approach Delay (s)		24.3			23.8			26.2			16.4	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	12.6
Intersection Capacity Utilization	57.4%	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)	237	847	35	245	642	84	27	203	261	145	435	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	0.98		1.00	0.92		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	4997		1770	1706		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	4997		1770	1706		1770	1863	1583
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)	258	921	38	266	698	91	29	221	284	158	473	212
RTOR Reduction (vph)	0	5	0	0	19	0	0	56	0	0	0	129
Lane Group Flow (vph)	258	954	0	266	770	0	29	449	0	158	473	83
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	18.3		11.1	20.4		2.4	26.2		8.1	31.9	31.9
Effective Green, g (s)	9.0	18.3		11.1	20.4		2.4	26.2		8.1	31.9	31.9
Actuated g/C Ratio	0.11	0.23		0.14	0.25		0.03	0.32		0.10	0.39	0.39
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)	380	1138		242	1254		52	550		176	731	621
v/s Ratio Prot	0.08	c0.19		c0.15	0.15		0.02	c0.26		c0.09	0.25	
v/s Ratio Perm												0.05
v/c Ratio	0.68	0.84		1.10	0.61		0.56	0.82		0.90	0.65	0.13
Uniform Delay, d1	34.8	30.1		35.1	27.0		38.9	25.3		36.2	20.1	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	5.3		86.9	0.6		7.2	8.6		39.0	1.5	0.0
Delay (s)	38.5	35.4		122.0	27.6		46.1	34.0		75.2	21.6	15.9
Level of Service	D	D		F	C		D	C		E	C	B
Approach Delay (s)		36.0			51.4			34.6			30.2	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	17.6
Intersection Capacity Utilization	80.1%	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)	195	276	61	295	334	164	130	1678	178	177	1354	243
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	0.99		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)	3433	4948		3433	4834		1770	5012		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	4948		3433	4834		1770	5012		1770	5085	1583
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)	212	300	66	321	363	178	141	1824	193	192	1472	264
RTOR Reduction (vph)	0	40	0	0	101	0	0	14	0	0	0	132
Lane Group Flow (vph)	212	326	0	321	440	0	141	2003	0	192	1472	132
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.8	14.6		8.8	16.6		9.5	36.2		10.3	37.0	37.0
Effective Green, g (s)	6.8	14.6		8.8	16.6		9.5	36.2		10.3	37.0	37.0
Actuated g/C Ratio	0.08	0.17		0.10	0.19		0.11	0.41		0.12	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)	266	825		345	916		192	2071		208	2148	669
v/s Ratio Prot	0.06	0.07		c0.09	c0.09		0.08	c0.40		c0.11	0.29	
v/s Ratio Perm												0.08
v/c Ratio	0.80	0.40		0.93	0.48		0.73	0.97		0.92	0.69	0.20
Uniform Delay, d1	39.7	32.6		39.1	31.7		37.8	25.1		38.3	20.6	15.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.2	0.7		30.8	0.9		11.8	13.1		40.8	1.2	0.3
Delay (s)	54.0	33.3		69.9	32.5		49.6	38.2		79.1	21.8	16.3
Level of Service	D	C		E	C		D	D		E	C	B
Approach Delay (s)		40.9			46.4			38.9			26.7	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	13.3
Intersection Capacity Utilization	76.9%	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)	374	630	208	479	417	158	131	1625	257	283	1853	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	4896		3433	4875		1770	4981		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	4896		3433	4875		1770	4981		1770	5085	1583
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)	407	685	226	521	453	172	142	1766	279	308	2014	332
RTOR Reduction (vph)	0	49	0	0	57	0	0	18	0	0	0	94
Lane Group Flow (vph)	407	862	0	521	568	0	142	2027	0	308	2014	238
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	16.3	19.8		16.8	20.3		11.0	46.4		19.3	54.7	54.7
Effective Green, g (s)	16.3	19.8		16.8	20.3		11.0	46.4		19.3	54.7	54.7
Actuated g/C Ratio	0.14	0.16		0.14	0.17		0.09	0.39		0.16	0.46	0.46
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)	466	808		481	825		162	1926		285	2318	722
v/s Ratio Prot	0.12	c0.18		c0.15	0.12		0.08	c0.41		c0.17	0.40	
v/s Ratio Perm												0.15
v/c Ratio	0.87	1.07		1.08	0.69		0.88	1.05		1.08	0.87	0.33
Uniform Delay, d1	50.8	50.1		51.6	46.9		53.8	36.8		50.3	29.4	20.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.9	50.9		65.3	3.2		36.5	36.0		76.5	4.1	0.6
Delay (s)	66.8	101.0		116.9	50.1		90.3	72.8		126.8	33.6	21.5
Level of Service	E	F		F	D		F	E		F	C	C
Approach Delay (s)		90.4			80.5			73.9			42.9	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM Average Control Delay	66.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	97.6%	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)	39	327	39	86	575	16	105	38	61	24	21	35
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	5005		1770	5065			1797	1583		1815	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	5005		1770	5065			1797	1583		1815	1583
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)	42	355	42	93	625	17	114	41	66	26	23	38
RTOR Reduction (vph)	0	17	0	0	3	0	0	0	56	0	0	36
Lane Group Flow (vph)	42	380	0	93	639	0	0	155	10	0	49	2
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)	1.8	14.2		3.3	16.3			6.8	6.8		2.8	2.8
Effective Green, g (s)	1.8	14.2		3.3	16.3			6.8	6.8		2.8	2.8
Actuated g/C Ratio	0.04	0.31		0.07	0.36			0.15	0.15		0.06	0.06
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)	70	1552		128	1803			267	235		111	97
v/s Ratio Prot	0.02	0.08		c0.05	c0.13			c0.09			c0.03	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.60	0.25		0.73	0.35			0.58	0.04		0.44	0.02
Uniform Delay, d1	21.6	11.8		20.8	10.9			18.2	16.7		20.7	20.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	9.5	0.0		15.9	0.0			2.1	0.0		1.0	0.0
Delay (s)	31.2	11.8		36.7	10.9			20.2	16.7		21.8	20.3
Level of Service	C	B		D	B			C	B		C	C
Approach Delay (s)		13.7			14.2			19.2			21.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	13.8
Intersection Capacity Utilization	40.5%	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)	32	780	91	129	482	6	69	13	102	6	6	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	0.98		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		0.98	1.00
Satd. Flow (prot)	1770	5006		1770	5075			1787	1583		1817	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	5006		1770	5075			1787	1583		1817	1583
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)	35	848	99	140	524	7	75	14	111	7	7	26
RTOR Reduction (vph)	0	15	0	0	1	0	0	0	99	0	0	25
Lane Group Flow (vph)	35	932	0	140	530	0	0	89	12	0	14	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)	1.7	18.8		5.6	23.3			5.2	5.2		1.5	1.5
Effective Green, g (s)	1.7	18.8		5.6	23.3			5.2	5.2		1.5	1.5
Actuated g/C Ratio	0.03	0.38		0.11	0.47			0.10	0.10		0.03	0.03
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)	60	1890		199	2374			187	165		55	48
v/s Ratio Prot	0.02	c0.19		c0.08	c0.10			c0.05			c0.01	
v/s Ratio Perm									0.01			0.00
v/c Ratio	0.58	0.49		0.70	0.22			0.48	0.07		0.25	0.02
Uniform Delay, d1	23.7	11.9		21.3	7.9			21.0	20.1		23.6	23.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	9.0	0.1		8.9	0.0			0.7	0.1		0.9	0.0
Delay (s)	32.7	11.9		30.2	7.9			21.7	20.2		24.5	23.5
Level of Service	C	B		C	A			C	C		C	C
Approach Delay (s)		12.7			12.5			20.9			23.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	23.6
Intersection Capacity Utilization	47.2%	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)	20	278	71	12	515	0	67	26	2	3	41	57
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	0.97		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	4930		1770	5085			1794			1857	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97			1.00	1.00
Satd. Flow (perm)	1770	4930		1770	5085			1794			1857	1583
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)	22	302	77	13	560	0	73	28	2	3	45	62
RTOR Reduction (vph)	0	44	0	0	0	0	0	1	0	0	0	57
Lane Group Flow (vph)	22	335	0	13	560	0	0	102	0	0	48	5
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	0.7	13.4		0.7	13.4			3.3			2.9	2.9
Effective Green, g (s)	0.7	13.4		0.7	13.4			3.3			2.9	2.9
Actuated g/C Ratio	0.02	0.36		0.02	0.36			0.09			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)	33	1771		33	1827			159			144	123
v/s Ratio Prot	c0.01	0.07		0.01	c0.11			c0.06			c0.03	
v/s Ratio Perm												0.00
v/c Ratio	0.67	0.19		0.39	0.31			0.64			0.33	0.04
Uniform Delay, d1	18.2	8.2		18.1	8.6			16.4			16.3	15.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	32.9	0.0		2.8	0.0			6.5			0.5	0.0
Delay (s)	51.1	8.2		20.9	8.6			22.9			16.8	16.0
Level of Service	D	A		C	A			C			B	B
Approach Delay (s)		10.6			8.9			22.9			16.3	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	17.0
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)	60	671	140	25	412	9	95	29	30	6	28	59
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	0.97		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	4954		1770	5069			1759			1845	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.99	1.00
Satd. Flow (perm)	1770	4954		1770	5069			1759			1845	1583
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)	65	729	152	27	448	10	103	32	33	7	30	64
RTOR Reduction (vph)	0	33	0	0	3	0	0	10	0	0	0	60
Lane Group Flow (vph)	65	848	0	27	455	0	0	158	0	0	37	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)	3.3	15.9		0.9	13.5			8.6			3.0	3.0
Effective Green, g (s)	3.3	15.9		0.9	13.5			8.6			3.0	3.0
Actuated g/C Ratio	0.07	0.35		0.02	0.30			0.19			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)	129	1735		35	1507			333			122	105
v/s Ratio Prot	c0.04	c0.17		0.02	0.09			c0.09			c0.02	
v/s Ratio Perm												0.00
v/c Ratio	0.50	0.49		0.77	0.30			0.48			0.30	0.04
Uniform Delay, d1	20.3	11.6		22.1	12.3			16.4			20.2	19.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.1	0.1		62.6	0.0			0.4			0.5	0.1
Delay (s)	21.4	11.6		84.7	12.4			16.8			20.7	19.9
Level of Service	C	B		F	B			B			C	B
Approach Delay (s)		12.3			16.4			16.8			20.2	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.2%	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)	35	252	61	60	378	43	67	246	78	38	183	49
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	0.98		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	4937		1770	5007		1770	1863	1583	1770	1804	
Flt Permitted	0.95	1.00		0.95	1.00		0.60	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	1770	4937		1770	5007		1123	1863	1583	1101	1804	
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)	38	274	66	65	411	47	73	267	85	41	199	53
RTOR Reduction (vph)	0	46	0	0	18	0	0	0	61	0	17	0
Lane Group Flow (vph)	38	294	0	65	440	0	73	267	24	41	235	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)	0.9	11.1		2.1	12.3		10.3	10.3	10.3	10.3	10.3	
Effective Green, g (s)	0.9	11.1		2.1	12.3		10.3	10.3	10.3	10.3	10.3	
Actuated g/C Ratio	0.02	0.30		0.06	0.33		0.28	0.28	0.28	0.28	0.28	
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)	43	1477		100	1660		312	517	439	306	501	
v/s Ratio Prot	0.02	0.06		c0.04	c0.09			c0.14			0.13	
v/s Ratio Perm							0.07		0.01	0.04		
v/c Ratio	0.88	0.20		0.65	0.27		0.23	0.52	0.05	0.13	0.47	
Uniform Delay, d1	18.0	9.7		17.1	9.1		10.4	11.3	9.8	10.1	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	91.0	0.0		10.9	0.0		0.1	0.4	0.0	0.1	0.3	
Delay (s)	109.1	9.7		28.1	9.1		10.5	11.7	9.8	10.1	11.4	
Level of Service	F	A		C	A		B	B	A	B	B	
Approach Delay (s)		19.7			11.5			11.1			11.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	37.1	Sum of lost time (s)	8.6
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)	59	551	57	56	414	54	70	333	99	47	300	51
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	0.99		1.00	0.98		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	5014		1770	4997		1770	1863	1583	1770	1822	
Flt Permitted	0.95	1.00		0.95	1.00		0.41	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	1770	5014		1770	4997		757	1863	1583	807	1822	
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)	64	599	62	61	450	59	76	362	108	51	326	55
RTOR Reduction (vph)	0	17	0	0	23	0	0	0	74	0	10	0
Lane Group Flow (vph)	64	644	0	61	486	0	76	362	34	51	371	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)	3.1	12.5		3.1	12.5		13.4	13.4	13.4	13.4	13.4	
Effective Green, g (s)	3.1	12.5		3.1	12.5		13.4	13.4	13.4	13.4	13.4	
Actuated g/C Ratio	0.07	0.29		0.07	0.29		0.31	0.31	0.31	0.31	0.31	
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)	129	1471		129	1466		238	586	498	254	573	
v/s Ratio Prot	c0.04	c0.13		0.03	0.10			0.19			c0.20	
v/s Ratio Perm							0.10		0.02	0.06		
v/c Ratio	0.50	0.44		0.47	0.33		0.32	0.62	0.07	0.20	0.65	
Uniform Delay, d1	19.0	12.2		19.0	11.8		11.1	12.4	10.2	10.7	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.1		1.0	0.0		0.3	1.4	0.0	0.1	1.9	
Delay (s)	20.1	12.3		20.0	11.8		11.4	13.8	10.2	10.8	14.5	
Level of Service	C	B		B	B		B	B	B	B	B	
Approach Delay (s)		13.0			12.7			12.8			14.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	56.0%	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)	173	67	52	57	123	151	86	705	29	96	645	267
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	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3306		3433	3247		3433	3518		3891	3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3306		3433	3247		3433	3518		3891	3384	
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)	188	73	57	62	134	164	93	766	32	104	701	290
RTOR Reduction (vph)	0	44	0	0	135	0	0	3	0	0	47	0
Lane Group Flow (vph)	188	86	0	62	163	0	93	795	0	104	944	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.4	16.2		3.5	12.3		5.0	24.4		5.0	24.4	
Effective Green, g (s)	7.4	16.2		3.5	12.3		5.0	24.4		5.0	24.4	
Actuated g/C Ratio	0.11	0.23		0.05	0.18		0.07	0.35		0.07	0.35	
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)	366	772		173	575		247	1237		280	1190	
v/s Ratio Prot	c0.05	c0.03		0.02	c0.05		c0.03	0.23		0.03	c0.28	
v/s Ratio Perm												
v/c Ratio	0.51	0.11		0.36	0.28		0.38	0.64		0.37	0.79	
Uniform Delay, d1	29.3	20.9		31.9	24.7		30.7	18.8		30.7	20.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.0		0.5	0.1		0.4	0.9		0.3	3.5	
Delay (s)	29.8	21.0		32.3	24.8		31.1	19.7		31.0	23.7	
Level of Service	C	C		C	C		C	B		C	C	
Approach Delay (s)		26.2			26.1			20.9			24.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	26.3
Intersection Capacity Utilization	60.0%	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)	347	207	123	67	78	132	127	868	57	219	803	337
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	0.94		1.00	0.91		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	3341		3433	3206		3433	3506		3891	3382	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3341		3433	3206		3433	3506		3891	3382	
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)	377	225	134	73	85	143	138	943	62	238	873	366
RTOR Reduction (vph)	0	99	0	0	124	0	0	4	0	0	42	0
Lane Group Flow (vph)	377	260	0	73	104	0	138	1001	0	238	1197	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	16.7		5.3	11.0		7.2	34.1		7.8	34.7	
Effective Green, g (s)	11.0	16.7		5.3	11.0		7.2	34.1		7.8	34.7	
Actuated g/C Ratio	0.13	0.20		0.06	0.13		0.09	0.40		0.09	0.41	
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)	448	663		216	419		294	1420		360	1394	
v/s Ratio Prot	c0.11	c0.08		0.02	0.03		0.04	0.29		c0.06	c0.35	
v/s Ratio Perm												
v/c Ratio	0.84	0.39		0.34	0.25		0.47	0.70		0.66	0.86	
Uniform Delay, d1	35.7	29.3		37.8	32.9		36.7	20.9		36.9	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.9	0.1		0.3	0.1		0.4	1.3		3.5	5.3	
Delay (s)	48.6	29.5		38.1	33.0		37.1	22.2		40.4	27.8	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		39.3			34.2			24.0			29.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	1	2	525	185	20
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1	2	571	201	22
RTOR Reduction (vph)	0	1	0	0	0	12
Lane Group Flow (vph)	2	0	2	571	201	10
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	c0.16	0.06	
v/s Ratio Perm		0.00				0.01
v/c Ratio	0.06	0.00	0.06	0.26	0.13	0.01
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	0.2	0.0	0.2	0.0	0.0	0.0
Delay (s)	12.0	11.8	12.0	2.0	4.0	3.8
Level of Service	B	B	B	A	A	A
Approach Delay (s)	11.9			2.1	4.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	24.5	Sum of lost time (s)	8.6
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	33	9	18	455	637	24
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	10	20	495	692	26
RTOR Reduction (vph)	0	10	0	0	0	10
Lane Group Flow (vph)	36	0	20	495	692	16
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	0.6	0.6	0.5	17.2	12.7	12.7
Effective Green, g (s)	0.6	0.6	0.5	17.2	12.7	12.7
Actuated g/C Ratio	0.02	0.02	0.02	0.65	0.48	0.48
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)	40	36	34	2306	1702	762
v/s Ratio Prot	c0.02		0.01	c0.14	c0.20	
v/s Ratio Perm		0.00				0.01
v/c Ratio	0.90	0.01	0.59	0.21	0.41	0.02
Uniform Delay, d1	12.9	12.6	12.8	1.9	4.4	3.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	101.8	0.0	15.6	0.0	0.1	0.0
Delay (s)	114.7	12.6	28.5	1.9	4.5	3.6
Level of Service	F	B	C	A	A	A
Approach Delay (s)	92.5			2.9	4.4	
Approach LOS	F			A	A	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	26.4	Sum of lost time (s)	13.2
Intersection Capacity Utilization	28.1%	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	2	141	0	53	11	1883	104	284	1628	5
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		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt		0.85		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1794		1681	1905	1583	1770	5045		1770	5085	1583
Flt Permitted		1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1794		1681	1905	1583	1770	5045		1770	5085	1583
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)	0	0	2	153	0	58	12	2047	113	309	1770	5
RTOR Reduction (vph)	0	2	0	0	0	51	0	4	0	0	0	1
Lane Group Flow (vph)	0	0	0	76	77	7	12	2156	0	309	1770	4
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)		1.4		12.7	12.7	12.7	1.2	59.5		22.4	80.7	80.7
Effective Green, g (s)		1.4		12.7	12.7	12.7	1.2	59.5		22.4	80.7	80.7
Actuated g/C Ratio		0.01		0.11	0.11	0.11	0.01	0.53		0.20	0.72	0.72
Clearance Time (s)		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	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)		22		190	215	179	19	2668		352	3648	1136
v/s Ratio Prot		c0.00		c0.05	0.04		0.01	c0.43		c0.17	0.35	
v/s Ratio Perm						0.00						0.00
v/c Ratio		0.00		0.40	0.36	0.04	0.63	0.81		0.88	0.49	0.00
Uniform Delay, d1		54.9		46.4	46.1	44.5	55.4	21.8		43.7	6.9	4.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.1		3.4	2.5	0.2	40.9	2.2		20.5	0.2	0.0
Delay (s)		54.9		49.7	48.6	44.7	96.3	24.0		64.2	7.1	4.5
Level of Service		D		D	D	D	F	C		E	A	A
Approach Delay (s)		54.9			47.9			24.4			15.6	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	75.9%	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)	39	7	29	225	11	241	52	2072	10	93	2293	48
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	1858		1681	1918	1583	1770	5082		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	1858		1681	1918	1583	1770	5082		1770	5085	1583
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)	42	8	32	245	12	262	57	2252	11	101	2492	52
RTOR Reduction (vph)	0	30	0	0	0	222	0	0	0	0	0	7
Lane Group Flow (vph)	42	10	0	127	130	40	57	2263	0	101	2492	45
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)	8.7	8.7		17.0	17.0	17.0	6.0	61.7		8.2	63.9	63.9
Effective Green, g (s)	8.7	8.7		17.0	17.0	17.0	6.0	61.7		8.2	63.9	63.9
Actuated g/C Ratio	0.08	0.08		0.15	0.15	0.15	0.05	0.55		0.07	0.57	0.57
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)	137	144		255	291	240	95	2797		129	2899	902
v/s Ratio Prot	c0.02	0.01		c0.08	0.07		0.03	0.45		c0.06	c0.49	
v/s Ratio Perm						0.03						0.03
v/c Ratio	0.31	0.07		0.50	0.45	0.17	0.60	0.81		0.78	0.86	0.05
Uniform Delay, d1	48.8	48.0		43.6	43.3	41.4	51.9	20.4		51.1	20.3	10.7
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	3.1	0.5		3.7	2.7	0.8	7.1	2.1		24.2	3.1	0.1
Delay (s)	52.0	48.5		47.4	45.9	42.2	59.0	22.5		75.3	23.4	10.7
Level of Service	D	D		D	D	D	E	C		E	C	B
Approach Delay (s)		50.3			44.4			23.4			25.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	11.6
Intersection Capacity Utilization	73.4%	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)	1343	1023	135	133	526	53	401	624	420	96	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	0.92	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)	1460	1112	147	145	572	58	436	678	457	104	286	450
RTOR Reduction (vph)	0	0	55	0	0	48	0	0	145	0	0	385
Lane Group Flow (vph)	1460	1112	92	145	572	10	436	678	312	104	286	65
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)	62.2	57.1	57.1	30.2	25.1	25.1	19.0	32.9	32.9	7.1	21.0	21.0
Effective Green, g (s)	62.2	57.1	57.1	30.2	25.1	25.1	19.0	32.9	32.9	7.1	21.0	21.0
Actuated g/C Ratio	0.43	0.39	0.39	0.21	0.17	0.17	0.13	0.23	0.23	0.05	0.14	0.14
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)	1468	1389	621	713	611	273	448	800	358	168	511	228
v/s Ratio Prot	c0.43	0.31		0.04	c0.16		c0.13	0.19		0.03	c0.08	
v/s Ratio Perm			0.06			0.01			c0.20			0.04
v/c Ratio	0.99	0.80	0.15	0.20	0.94	0.04	0.97	0.85	0.87	0.62	0.56	0.28
Uniform Delay, d1	41.5	39.2	28.5	47.7	59.4	50.1	63.0	53.9	54.2	67.9	57.9	55.5
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	22.0	3.2	0.0	0.1	21.6	0.0	35.2	8.0	19.4	4.7	0.8	0.3
Delay (s)	63.5	42.4	28.5	47.7	81.0	50.2	98.2	61.9	73.6	72.6	58.7	55.8
Level of Service	E	D	C	D	F	D	F	E	E	E	E	E
Approach Delay (s)		53.0			72.5			75.4			58.9	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM Average Control Delay	62.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	145.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	90.3%	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)	1001	1359	335	447	1202	77	283	603	299	108	822	949
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	0.92	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)	1088	1477	364	486	1307	84	308	655	325	117	893	1032
RTOR Reduction (vph)	0	0	83	0	0	34	0	0	171	0	0	236
Lane Group Flow (vph)	1088	1477	281	486	1307	50	308	655	154	117	893	796
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)	30.0	60.1	60.1	15.0	45.1	45.1	11.0	34.7	34.7	22.0	45.7	45.7
Effective Green, g (s)	30.0	60.1	60.1	15.0	45.1	45.1	11.0	34.7	34.7	22.0	45.7	45.7
Actuated g/C Ratio	0.20	0.40	0.40	0.10	0.30	0.30	0.07	0.23	0.23	0.15	0.30	0.30
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)	687	1418	634	343	1064	476	252	819	366	504	1078	482
v/s Ratio Prot	c0.32	0.42		0.14	c0.37		c0.09	0.19		0.03	0.25	
v/s Ratio Perm			0.18			0.03			0.10			c0.50
v/c Ratio	1.58	1.04	0.44	1.42	1.23	0.10	1.22	0.80	0.42	0.23	0.83	1.65
Uniform Delay, d1	60.0	44.9	32.7	67.5	52.4	37.9	69.5	54.4	49.1	56.5	48.5	52.2
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	269.6	35.5	0.2	204.0	111.2	0.0	130.2	5.1	0.3	0.1	5.1	302.6
Delay (s)	329.6	80.4	32.9	271.5	163.6	37.9	199.7	59.5	49.4	56.6	53.6	354.7
Level of Service	F	F	C	F	F	D	F	E	D	E	D	F
Approach Delay (s)		167.1			185.9			90.5			206.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	169.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
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	1195	7	13	769	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	3509		1770	1855		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	3509		1770	1855		1770	1863	1583
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)	103	1299	8	14	836	51	17	37	1	90	84	71
RTOR Reduction (vph)	0	0	0	0	5	0	0	1	0	0	0	62
Lane Group Flow (vph)	103	1307	0	14	882	0	17	37	0	90	84	9
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	5.1	30.7		0.7	26.3		0.8	4.1		3.9	7.2	7.2
Effective Green, g (s)	5.1	30.7		0.7	26.3		0.8	4.1		3.9	7.2	7.2
Actuated g/C Ratio	0.09	0.55		0.01	0.47		0.01	0.07		0.07	0.13	0.13
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)	162	1952		22	1660		25	137		124	241	205
v/s Ratio Prot	c0.06	c0.37		0.01	0.25		0.01	0.02		c0.05	c0.05	
v/s Ratio Perm												0.01
v/c Ratio	0.64	0.67		0.64	0.53		0.68	0.27		0.73	0.35	0.04
Uniform Delay, d1	24.4	8.8		27.3	10.3		27.3	24.3		25.3	22.1	21.2
Progression Factor	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		36.7	0.2		46.7	0.4		16.3	0.3	0.0
Delay (s)	30.2	9.5		64.0	10.5		74.0	24.7		41.6	22.4	21.2
Level of Service	C	A		E	B		E	C		D	C	C
Approach Delay (s)		11.0			11.3			39.9			29.1	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.0%	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)	97	1798	18	37	1467	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	3534		1770	3518		1770	1836		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	3534		1770	3518		1770	1836		1770	1863	1583
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)	105	1954	20	40	1595	67	86	102	11	198	70	107
RTOR Reduction (vph)	0	0	0	0	2	0	0	3	0	0	0	90
Lane Group Flow (vph)	105	1974	0	40	1660	0	86	110	0	198	70	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)	9.5	71.8		5.1	67.4		7.7	12.6		14.1	19.0	19.0
Effective Green, g (s)	9.5	71.8		5.1	67.4		7.7	12.6		14.1	19.0	19.0
Actuated g/C Ratio	0.08	0.60		0.04	0.56		0.06	0.11		0.12	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)	140	2118		75	1979		114	193		208	295	251
v/s Ratio Prot	c0.06	c0.56		0.02	0.47		0.05	c0.06		c0.11	0.04	
v/s Ratio Perm												0.01
v/c Ratio	0.75	0.93		0.53	0.84		0.75	0.57		0.95	0.24	0.07
Uniform Delay, d1	54.0	21.8		56.2	21.7		55.1	51.0		52.5	44.1	42.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.0	8.0		3.6	3.1		21.9	2.5		48.3	0.2	0.0
Delay (s)	71.9	29.8		59.8	24.8		77.0	53.6		100.8	44.2	42.9
Level of Service	E	C		E	C		E	D		F	D	D
Approach Delay (s)		31.9			25.7			63.7			73.7	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.5%	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)	95	1089	103	73	658	22	111	414	94	20	258	44
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	1.00		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	3493		1770	3522		1770	3441		1770	3462	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3493		1770	3522		1770	3441		1770	3462	
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)	103	1184	112	79	715	24	121	450	102	22	280	48
RTOR Reduction (vph)	0	7	0	0	2	0	0	21	0	0	16	0
Lane Group Flow (vph)	103	1289	0	79	737	0	121	531	0	22	312	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	32.2		5.1	31.1		7.5	20.5		2.6	15.6	
Effective Green, g (s)	6.2	32.2		5.1	31.1		7.5	20.5		2.6	15.6	
Actuated g/C Ratio	0.08	0.43		0.07	0.42		0.10	0.27		0.03	0.21	
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)	147	1506		121	1466		178	944		62	723	
v/s Ratio Prot	c0.06	c0.37		0.04	0.21		c0.07	c0.15		0.01	0.09	
v/s Ratio Perm												
v/c Ratio	0.70	0.86		0.65	0.50		0.68	0.56		0.35	0.43	
Uniform Delay, d1	33.3	19.2		33.9	16.1		32.4	23.3		35.2	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.6	4.8		9.2	0.1		7.9	0.5		1.3	0.2	
Delay (s)	45.0	24.0		43.2	16.2		40.3	23.7		36.5	25.8	
Level of Service	D	C		D	B		D	C		D	C	
Approach Delay (s)		25.5			18.8			26.7			26.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	6.4
Intersection Capacity Utilization	72.2%	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)	135	1666	91	56	1230	15	186	322	9	33	656	75
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	1.00		1.00	1.00		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	3512		1770	3533		1770	3524		1770	3484	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3512		1770	3533		1770	3524		1770	3484	
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)	147	1811	99	61	1337	16	202	350	10	36	713	82
RTOR Reduction (vph)	0	3	0	0	1	0	0	1	0	0	7	0
Lane Group Flow (vph)	147	1907	0	61	1352	0	202	359	0	36	788	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.2	66.0		6.0	59.8		13.8	37.6		4.8	28.6	
Effective Green, g (s)	12.2	66.0		6.0	59.8		13.8	37.6		4.8	28.6	
Actuated g/C Ratio	0.09	0.51		0.05	0.46		0.11	0.29		0.04	0.22	
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)	168	1801		83	1642		190	1030		66	774	
v/s Ratio Prot	c0.08	c0.54		0.03	0.38		c0.11	0.10		0.02	c0.23	
v/s Ratio Perm												
v/c Ratio	0.88	1.06		0.73	0.82		1.06	0.35		0.55	1.02	
Uniform Delay, d1	57.5	31.3		60.6	29.9		57.4	35.9		60.9	50.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.3	38.8		24.9	3.3		83.0	0.1		4.9	37.0	
Delay (s)	92.8	70.1		85.4	33.2		140.5	36.0		65.7	87.0	
Level of Service	F	E		F	C		F	D		E	F	
Approach Delay (s)		71.8			35.5			73.5			86.1	
Approach LOS		E			D			E			F	

Intersection Summary			
HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	128.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	96.8%	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)	115	783	60	152	592	68	106	570	262	126	304	134
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	0.92	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)	125	851	65	165	643	74	115	620	285	137	330	146
RTOR Reduction (vph)	0	0	36	0	0	52	0	0	208	0	0	115
Lane Group Flow (vph)	125	851	29	165	643	22	115	620	77	137	330	31
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)	5.8	18.0	18.0	7.9	20.1	20.1	10.4	17.1	17.1	7.3	14.0	14.0
Effective Green, g (s)	5.8	18.0	18.0	7.9	20.1	20.1	10.4	17.1	17.1	7.3	14.0	14.0
Actuated g/C Ratio	0.09	0.27	0.27	0.12	0.30	0.30	0.16	0.26	0.26	0.11	0.21	0.21
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)	155	1383	430	211	1075	481	278	914	409	195	748	335
v/s Ratio Prot	0.07	0.17		c0.09	c0.18		0.06	c0.18		c0.08	0.09	
v/s Ratio Perm			0.02			0.01			0.05			0.02
v/c Ratio	0.81	0.62	0.07	0.78	0.60	0.05	0.41	0.68	0.19	0.70	0.44	0.09
Uniform Delay, d1	29.6	21.1	17.9	28.3	19.6	16.3	25.2	22.1	19.1	28.4	22.7	21.0
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	24.2	0.6	0.0	15.8	0.6	0.0	0.4	1.6	0.1	9.0	0.2	0.0
Delay (s)	53.9	21.6	17.9	44.1	20.2	16.3	25.5	23.7	19.2	37.4	22.8	21.0
Level of Service	D	C	B	D	C	B	C	C	B	D	C	C
Approach Delay (s)		25.3			24.4			22.6			25.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	11.5
Intersection Capacity Utilization	60.0%	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)	247	1341	116	189	902	112	71	470	101	131	738	280
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	0.92	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)	268	1458	126	205	980	122	77	511	110	142	802	304
RTOR Reduction (vph)	0	0	32	0	0	84	0	0	85	0	0	108
Lane Group Flow (vph)	268	1458	94	205	980	38	77	511	25	142	802	196
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)	14.3	29.6	29.6	11.4	26.7	26.7	5.7	19.2	19.2	8.9	22.4	22.4
Effective Green, g (s)	14.3	29.6	29.6	11.4	26.7	26.7	5.7	19.2	19.2	8.9	22.4	22.4
Actuated g/C Ratio	0.17	0.35	0.35	0.13	0.31	0.31	0.07	0.23	0.23	0.10	0.26	0.26
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)	298	1771	551	237	1112	497	119	799	358	185	933	417
v/s Ratio Prot	c0.15	c0.29		0.12	0.28		0.04	c0.14		0.08	c0.23	
v/s Ratio Perm			0.06			0.02			0.02			0.12
v/c Ratio	0.90	0.82	0.17	0.86	0.88	0.08	0.65	0.64	0.07	0.77	0.86	0.47
Uniform Delay, d1	34.6	25.3	19.2	36.0	27.6	20.5	38.7	29.8	25.9	37.0	29.8	26.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.1	3.1	0.1	25.6	8.2	0.0	8.7	1.2	0.0	15.7	7.7	0.3
Delay (s)	61.7	28.4	19.2	61.7	35.8	20.5	47.4	31.0	25.9	52.7	37.5	26.6
Level of Service	E	C	B	E	D	C	D	C	C	D	D	C
Approach Delay (s)		32.6			38.4			32.0			36.6	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	76.6%	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)	191	540	442	317	542	26	42	41	72	34	384	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	0.99	
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	5051		1770	1863	1583	1770	1837	
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	5051		1770	1863	1583	1770	1837	
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)	208	587	480	345	589	28	46	45	78	37	417	43
RTOR Reduction (vph)	0	163	0	0	7	0	0	0	56	0	4	0
Lane Group Flow (vph)	208	904	0	345	610	0	46	45	22	37	456	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)	22.4	19.4		17.9	14.9		3.6	22.7	22.7	3.4	22.5	
Effective Green, g (s)	22.4	19.4		17.9	14.9		3.6	22.7	22.7	3.4	22.5	
Actuated g/C Ratio	0.28	0.24		0.22	0.19		0.04	0.28	0.28	0.04	0.28	
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)	496	1150		396	941		80	529	449	75	517	
v/s Ratio Prot	0.12	c0.19		c0.19	0.12		c0.03	0.02		0.02	c0.25	
v/s Ratio Perm									0.01			
v/c Ratio	0.42	0.87dr		0.87	0.65		0.57	0.09	0.05	0.49	0.88	
Uniform Delay, d1	23.5	28.4		29.9	30.1		37.5	21.0	20.8	37.5	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	3.3		18.0	1.2		6.1	0.0	0.0	1.9	15.7	
Delay (s)	23.7	31.7		47.9	31.3		43.5	21.1	20.8	39.3	43.2	
Level of Service	C	C		D	C		D	C	C	D	D	
Approach Delay (s)		30.4			37.3			27.1			42.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
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)	204	1315	48	67	927	84	174	321	183	171	138	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	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5059		1770	5022		1770	1863	1583	1770	1694	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5059		1770	5022		1770	1863	1583	1770	1694	
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)	222	1429	52	73	1008	91	189	349	199	186	150	230
RTOR Reduction (vph)	0	4	0	0	12	0	0	0	154	0	65	0
Lane Group Flow (vph)	222	1477	0	73	1087	0	189	349	45	186	315	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)	13.2	30.6		5.3	22.7		10.8	18.6	18.6	10.4	18.2	
Effective Green, g (s)	13.2	30.6		5.3	22.7		10.8	18.6	18.6	10.4	18.2	
Actuated g/C Ratio	0.16	0.38		0.07	0.28		0.13	0.23	0.23	0.13	0.22	
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)	287	1899		115	1399		235	425	361	226	378	
v/s Ratio Prot	0.13	c0.29		0.04	c0.22		0.11	c0.19		0.11	c0.19	
v/s Ratio Perm									0.03			
v/c Ratio	0.77	0.78		0.63	0.78		0.80	0.82	0.13	0.82	0.83	
Uniform Delay, d1	32.7	22.5		37.2	27.1		34.3	29.9	25.0	34.7	30.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.2	1.9		8.1	2.5		16.9	11.5	0.1	20.0	13.9	
Delay (s)	43.9	24.3		45.3	29.6		51.2	41.4	25.0	54.7	44.1	
Level of Service	D	C		D	C		D	D	C	D	D	
Approach Delay (s)		26.9			30.6			39.5			47.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	8.6
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)	123	476	66	77	814	19	23	62	56	43	52	20
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	0.96	
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	5068		1770	1863	1583	1770	1785	
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	5068		1770	1863	1583	1770	1785	
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)	134	517	72	84	885	21	25	67	61	47	57	22
RTOR Reduction (vph)	0	0	47	0	3	0	0	0	54	0	19	0
Lane Group Flow (vph)	134	517	25	84	903	0	25	67	7	47	60	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)	5.3	16.4	16.4	6.2	17.3		0.8	5.0	5.0	1.8	6.0	
Effective Green, g (s)	5.3	16.4	16.4	6.2	17.3		0.8	5.0	5.0	1.8	6.0	
Actuated g/C Ratio	0.11	0.35	0.35	0.13	0.37		0.02	0.11	0.11	0.04	0.13	
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)	202	1793	558	236	1886		30	200	170	69	230	
v/s Ratio Prot	c0.08	0.10		0.05	c0.18		0.01	c0.04		c0.03	0.03	
v/s Ratio Perm			0.02						0.00			
v/c Ratio	0.66	0.29	0.05	0.36	0.48		0.83	0.34	0.04	0.68	0.26	
Uniform Delay, d1	19.7	10.8	9.9	18.3	11.2		22.8	19.2	18.6	22.1	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	6.2	0.0	0.0	0.3	0.1		93.0	0.4	0.0	19.8	0.2	
Delay (s)	26.0	10.9	9.9	18.7	11.2		115.7	19.6	18.6	41.9	18.5	
Level of Service	C	B	A	B	B		F	B	B	D	B	
Approach Delay (s)		13.6			11.9			34.9			27.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	17.1
Intersection Capacity Utilization	42.9%	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)	96	1460	45	25	961	23	46	37	84	39	20	36
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	5067		1770	1863	1583	1770	1684	
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	5067		1770	1863	1583	1770	1684	
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)	104	1587	49	27	1045	25	50	40	91	42	22	39
RTOR Reduction (vph)	0	0	13	0	2	0	0	0	81	0	36	0
Lane Group Flow (vph)	104	1587	36	27	1068	0	50	40	10	42	25	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)	5.1	27.8	27.8	1.2	23.9		3.0	5.8	5.8	1.9	4.7	
Effective Green, g (s)	5.1	27.8	27.8	1.2	23.9		3.0	5.8	5.8	1.9	4.7	
Actuated g/C Ratio	0.09	0.52	0.52	0.02	0.44		0.06	0.11	0.11	0.04	0.09	
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)	168	2628	818	39	2251		99	201	171	63	147	
v/s Ratio Prot	0.06	c0.31		0.02	c0.21		c0.03	c0.02		0.02	0.02	
v/s Ratio Perm			0.02						0.01			
v/c Ratio	0.62	0.60	0.04	0.69	0.47		0.51	0.20	0.06	0.67	0.17	
Uniform Delay, d1	23.4	9.1	6.4	26.1	10.5		24.7	21.9	21.5	25.6	22.7	
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	4.7	0.3	0.0	35.0	0.1		1.5	0.2	0.1	18.7	0.2	
Delay (s)	28.1	9.4	6.4	61.1	10.6		26.2	22.1	21.6	44.3	23.0	
Level of Service	C	A	A	E	B		C	C	C	D	C	
Approach Delay (s)		10.4			11.8			23.0			31.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.8	Sum of lost time (s)	8.6
Intersection Capacity Utilization	51.7%	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)	98	331	83	302	837	50	64	195	118	42	285	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	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	4933		1770	5043		1770	1863	1583	1770	1827	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4933		1770	5043		1770	1863	1583	1770	1827	
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)	107	360	90	328	910	54	70	212	128	46	310	46
RTOR Reduction (vph)	0	52	0	0	7	0	0	0	94	0	7	0
Lane Group Flow (vph)	107	398	0	328	957	0	70	212	34	46	349	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)	5.6	16.6		10.9	21.9		3.7	17.7	17.7	3.3	17.3	
Effective Green, g (s)	5.6	16.6		10.9	21.9		3.7	17.7	17.7	3.3	17.3	
Actuated g/C Ratio	0.08	0.25		0.17	0.33		0.06	0.27	0.27	0.05	0.26	
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)	150	1241		292	1673		99	500	425	89	479	
v/s Ratio Prot	c0.06	0.08		c0.19	c0.19		c0.04	0.11		0.03	c0.19	
v/s Ratio Perm									0.02			
v/c Ratio	0.71	0.32		1.12	0.57		0.71	0.42	0.08	0.52	0.73	
Uniform Delay, d1	29.4	20.1		27.6	18.2		30.6	19.9	18.1	30.6	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.5	0.1		90.1	0.3		17.1	0.2	0.0	2.1	4.7	
Delay (s)	41.9	20.2		117.6	18.5		47.7	20.2	18.1	32.7	26.9	
Level of Service	D	C		F	B		D	C	B	C	C	
Approach Delay (s)		24.3			43.6			24.2			27.6	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	16.6
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)	294	1101	75	127	570	105	57	551	235	118	342	68
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	0.98		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	5036		1770	4967		1770	1863	1583	1770	1816	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5036		1770	4967		1770	1863	1583	1770	1816	
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)	320	1197	82	138	620	114	62	599	255	128	372	74
RTOR Reduction (vph)	0	8	0	0	30	0	0	0	170	0	7	0
Lane Group Flow (vph)	320	1271	0	138	704	0	62	599	85	128	439	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)	18.9	28.1		9.0	18.2		5.5	31.0	31.0	7.8	33.3	
Effective Green, g (s)	18.9	28.1		9.0	18.2		5.5	31.0	31.0	7.8	33.3	
Actuated g/C Ratio	0.20	0.30		0.10	0.19		0.06	0.33	0.33	0.08	0.36	
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)	358	1515		171	968		104	618	525	148	647	
v/s Ratio Prot	0.18	c0.25		0.08	c0.14		0.04	c0.32		c0.07	0.24	
v/s Ratio Perm									0.05			
v/c Ratio	0.89	0.84		0.81	0.73		0.60	0.97	0.16	0.86	0.68	
Uniform Delay, d1	36.3	30.5		41.3	35.3		42.9	30.7	22.0	42.3	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	22.9	4.1		22.4	2.3		6.0	28.1	0.1	36.4	2.2	
Delay (s)	59.2	34.6		63.7	37.6		48.9	58.8	22.1	78.7	27.7	
Level of Service	E	C		E	D		D	E	C	E	C	
Approach Delay (s)		39.5			41.7			47.9			39.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	41.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	18.4
Intersection Capacity Utilization	80.1%	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	273	123	283	775	76	178	69	0	21	60	7
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	3481	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.71	1.00	
Satd. Flow (perm)		3539	1583	1770	5085	1583	1317	3539		1314	3481	
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)	0	297	134	308	842	83	193	75	0	23	65	8
RTOR Reduction (vph)	0	0	102	0	0	36	0	0	0	0	6	0
Lane Group Flow (vph)	0	297	32	308	842	47	193	75	0	23	67	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)		10.7	10.7	10.4	25.1	25.1	9.0	9.0		9.0	9.0	
Effective Green, g (s)		10.7	10.7	10.4	25.1	25.1	9.0	9.0		9.0	9.0	
Actuated g/C Ratio		0.24	0.24	0.23	0.57	0.57	0.20	0.20		0.20	0.20	
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)		855	382	416	2881	897	268	719		267	707	
v/s Ratio Prot		0.08	0.02	c0.17	c0.17			0.02			0.02	
v/s Ratio Perm						0.03	c0.15			0.02		
v/c Ratio		0.35	0.08	0.74	0.29	0.05	0.72	0.10		0.09	0.09	
Uniform Delay, d1		13.9	13.0	15.7	5.0	4.3	16.5	14.4		14.3	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		0.1	0.0	6.1	0.0	0.0	7.8	0.0		0.1	0.0	
Delay (s)		14.0	13.0	21.8	5.0	4.3	24.3	14.4		14.4	14.4	
Level of Service		B	B	C	A	A	C	B		B	B	
Approach Delay (s)		13.7			9.2			21.5			14.4	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	9.3
Intersection Capacity Utilization	52.4%	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)	0	694	355	200	448	46	82	70	0	39	133	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		0.70	1.00	
Satd. Flow (perm)		3539	1583	1770	5085	1583	1229	3539		1313	3539	
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)	0	754	386	217	487	50	89	76	0	42	145	0
RTOR Reduction (vph)	0	0	247	0	0	17	0	0	0	0	0	0
Lane Group Flow (vph)	0	754	139	217	487	33	89	76	0	42	145	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)		17.3	17.3	10.0	31.3	31.3	6.5	6.5		6.5	6.5	
Effective Green, g (s)		17.3	17.3	10.0	31.3	31.3	6.5	6.5		6.5	6.5	
Actuated g/C Ratio		0.36	0.36	0.21	0.65	0.65	0.14	0.14		0.14	0.14	
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)		1276	571	369	3316	1032	166	479		178	479	
v/s Ratio Prot		c0.21	0.09	c0.12	0.10			0.02			0.04	
v/s Ratio Perm						0.02	c0.07			0.03		
v/c Ratio		0.59	0.24	0.59	0.15	0.03	0.54	0.16		0.24	0.30	
Uniform Delay, d1		12.5	10.8	17.1	3.2	3.0	19.3	18.3		18.5	18.7	
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	0.1	1.5	0.0	0.0	1.7	0.1		0.2	0.1	
Delay (s)		13.0	10.8	18.7	3.2	3.0	21.0	18.4		18.8	18.8	
Level of Service		B	B	B	A	A	C	B		B	B	
Approach Delay (s)		12.2			7.7			19.8			18.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	54.7%	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)	5	50	15	17	64	14	9	234	21	26	408	15
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			0.98		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)		1803			1810		1770	1840		1770	1863	1583
Flt Permitted		0.98			0.95		0.43	1.00		0.59	1.00	1.00
Satd. Flow (perm)		1777			1733		793	1840		1098	1863	1583
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)	5	54	16	18	70	15	10	254	23	28	443	16
RTOR Reduction (vph)	0	11	0	0	10	0	0	6	0	0	0	10
Lane Group Flow (vph)	0	64	0	0	93	0	10	271	0	28	443	6
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		6
Actuated Green, G (s)		11.5			11.5		13.6	13.6		13.6	13.6	13.6
Effective Green, g (s)		11.5			11.5		13.6	13.6		13.6	13.6	13.6
Actuated g/C Ratio		0.34			0.34		0.40	0.40		0.40	0.40	0.40
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)		596			581		314	730		435	739	628
v/s Ratio Prot								0.15			c0.24	
v/s Ratio Perm		0.04			c0.05		0.01			0.03		0.00
v/c Ratio		0.11			0.16		0.03	0.37		0.06	0.60	0.01
Uniform Delay, d1		7.9			8.0		6.3	7.3		6.4	8.2	6.3
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.2			0.3		0.1	0.7		0.1	2.0	0.0
Delay (s)		8.0			8.3		6.4	8.0		6.5	10.2	6.3
Level of Service		A			A		A	A		A	B	A
Approach Delay (s)		8.0			8.3			7.9			9.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	34.3	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)	20	137	49	39	143	63	20	968	58	30	510	22
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)		1794			1784		1770	1847		1770	1863	1583
Flt Permitted		0.95			0.91		0.39	1.00		0.07	1.00	1.00
Satd. Flow (perm)		1719			1627		721	1847		134	1863	1583
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)	22	149	53	42	155	68	22	1052	63	33	554	24
RTOR Reduction (vph)	0	13	0	0	14	0	0	2	0	0	0	8
Lane Group Flow (vph)	0	211	0	0	251	0	22	1113	0	33	554	16
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		6
Actuated Green, G (s)		20.3			20.3		55.6	55.6		55.6	55.6	55.6
Effective Green, g (s)		20.3			20.3		55.6	55.6		55.6	55.6	55.6
Actuated g/C Ratio		0.24			0.24		0.65	0.65		0.65	0.65	0.65
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)		410			388		471	1207		88	1217	1034
v/s Ratio Prot								c0.60			0.30	
v/s Ratio Perm		0.12			c0.15		0.03			0.25		0.01
v/c Ratio		0.51			0.65		0.05	0.92		0.38	0.46	0.02
Uniform Delay, d1		28.1			29.2		5.3	12.9		6.8	7.3	5.2
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.2			5.0		0.1	12.0		5.5	0.6	0.0
Delay (s)		30.3			34.2		5.4	24.9		12.3	7.8	5.2
Level of Service		C			C		A	C		B	A	A
Approach Delay (s)		30.3			34.2			24.5			8.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	83.3%	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)	76	183	22	11	96	21	6	233	14	39	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	1812			3506			3460	
Flt Permitted	0.68	1.00	1.00	0.63	1.00			0.93			0.91	
Satd. Flow (perm)	1258	1863	1583	1179	1812			3279			3176	
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)	83	199	24	12	104	23	7	253	15	42	492	78
RTOR Reduction (vph)	0	0	14	0	14	0	0	11	0	0	31	0
Lane Group Flow (vph)	83	199	10	12	113	0	0	264	0	0	581	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)	11.7	11.7	11.7	11.7	11.7			8.6			8.6	
Effective Green, g (s)	11.7	11.7	11.7	11.7	11.7			8.6			8.6	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40			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)	509	754	641	477	734			976			945	
v/s Ratio Prot		c0.11			0.06							
v/s Ratio Perm	0.07		0.01	0.01				0.08			c0.18	
v/c Ratio	0.16	0.26	0.02	0.03	0.15			0.27			0.61	
Uniform Delay, d1	5.5	5.7	5.1	5.2	5.5			7.8			8.7	
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	0.0			0.1			0.8	
Delay (s)	5.5	5.8	5.2	5.2	5.5			7.8			9.6	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		5.7			5.5			7.8			9.6	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	28.9	Sum of lost time (s)	8.6
Intersection Capacity Utilization	55.3%	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)	69	216	25	19	166	37	18	412	25	37	380	61
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	1812			3503			3458	
Flt Permitted	0.62	1.00	1.00	0.61	1.00			0.93			0.90	
Satd. Flow (perm)	1156	1863	1583	1141	1812			3252			3109	
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)	75	235	27	21	180	40	20	448	27	40	413	66
RTOR Reduction (vph)	0	0	17	0	18	0	0	10	0	0	28	0
Lane Group Flow (vph)	75	235	10	21	202	0	0	485	0	0	491	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			11.8			11.8	
Effective Green, g (s)	11.8	11.8	11.8	11.8	11.8			11.8			11.8	
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37			0.37			0.37	
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)	424	683	580	418	664			1192			1139	
v/s Ratio Prot		c0.13			0.11							
v/s Ratio Perm	0.06		0.01	0.02				0.15			c0.16	
v/c Ratio	0.18	0.34	0.02	0.05	0.30			0.41			0.43	
Uniform Delay, d1	6.9	7.4	6.5	6.6	7.3			7.6			7.7	
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			0.1			0.1	
Delay (s)	7.0	7.5	6.5	6.6	7.4			7.7			7.8	
Level of Service	A	A	A	A	A			A			A	
Approach Delay (s)		7.3			7.3			7.7			7.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	32.2	Sum of lost time (s)	8.6
Intersection Capacity Utilization	68.9%	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)	13	60	11	13	131	14	13	249	11	32	434	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	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1819		1770	1836		1770	1851		1770	1856	
Flt Permitted	0.66	1.00		0.71	1.00		0.37	1.00		0.59	1.00	
Satd. Flow (perm)	1225	1819		1317	1836		684	1851		1092	1856	
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)	14	65	12	14	142	15	14	271	12	35	472	12
RTOR Reduction (vph)	0	8	0	0	9	0	0	4	0	0	2	0
Lane Group Flow (vph)	14	69	0	14	148	0	14	279	0	35	482	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	11.5	11.5		11.5	11.5		12.2	12.2		12.2	12.2	
Effective Green, g (s)	11.5	11.5		11.5	11.5		12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.37	0.37		0.37	0.37	
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)	428	636		460	642		254	686		405	688	
v/s Ratio Prot		0.04			c0.08			0.15			c0.26	
v/s Ratio Perm	0.01			0.01			0.02			0.03		
v/c Ratio	0.03	0.11		0.03	0.23		0.06	0.41		0.09	0.70	
Uniform Delay, d1	7.0	7.2		7.0	7.6		6.6	7.7		6.7	8.8	
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		0.0	0.1		0.1	0.5		0.1	3.5	
Delay (s)	7.1	7.3		7.1	7.7		6.8	8.2		6.9	12.3	
Level of Service	A	A		A	A		A	A		A	B	
Approach Delay (s)		7.3			7.7			8.1			11.9	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	32.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	48.4%	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)	29	112	10	20	75	42	13	1038	10	22	540	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	0.95		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	1762		1770	1860		1770	1859	
Flt Permitted	0.67	1.00		0.66	1.00		0.37	1.00		0.08	1.00	
Satd. Flow (perm)	1257	1840		1237	1762		685	1860		146	1859	
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)	32	122	11	22	82	46	14	1128	11	24	587	7
RTOR Reduction (vph)	0	4	0	0	25	0	0	0	0	0	1	0
Lane Group Flow (vph)	32	129	0	22	103	0	14	1139	0	24	593	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	17.1	17.1		17.1	17.1		50.9	50.9		50.9	50.9	
Effective Green, g (s)	17.1	17.1		17.1	17.1		50.9	50.9		50.9	50.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.66	0.66		0.66	0.66	
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)	278	408		274	390		452	1226		96	1226	
v/s Ratio Prot		c0.07			0.06			c0.61			0.32	
v/s Ratio Perm	0.03			0.02			0.02			0.16		
v/c Ratio	0.12	0.32		0.08	0.26		0.03	0.93		0.25	0.48	
Uniform Delay, d1	24.0	25.2		23.8	24.8		4.6	11.6		5.4	6.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.1	0.3		0.0	12.3		1.9	0.4	
Delay (s)	24.1	25.5		23.9	25.1		4.6	23.8		7.2	7.0	
Level of Service	C	C		C	C		A	C		A	A	
Approach Delay (s)		25.2			24.9			23.6			7.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
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	26	13	29	9	39	74	476	1188	38
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	1685		1770	1690			1770	5085	2787	
Flt Permitted		0.68	1.00		0.73	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1259	1685		1357	1690			1770	5085	2787	
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)	3	20	16	28	14	32	10	42	80	517	1291	41
RTOR Reduction (vph)	0	0	26	0	0	31	0	0	0	0	1	0
Lane Group Flow (vph)	0	23	18	0	14	53	0	0	80	517	1331	0
Turn Type	Perm	Perm			Perm				Prot		Over	
Protected Phases			8			8			5	2	7	
Permitted Phases	8	8			8							
Actuated Green, G (s)		6.8	6.8		6.8	6.8			7.8	20.9	58.6	
Effective Green, g (s)		6.8	6.8		6.8	6.8			7.8	20.9	58.6	
Actuated g/C Ratio		0.06	0.06		0.06	0.06			0.07	0.18	0.50	
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)		74	99		79	99			119	915	1405	
v/s Ratio Prot			0.01			c0.03			0.05	0.10	c0.48	
v/s Ratio Perm		0.02			0.01							
v/c Ratio		0.31	0.18		0.18	0.53			0.67	0.57	0.95	
Uniform Delay, d1		52.5	52.0		52.0	53.2			53.0	43.5	27.3	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		0.9	0.3		0.4	2.8			11.1	1.9	14.3	
Delay (s)		53.3	52.4		52.4	55.9			64.1	45.4	41.6	
Level of Service		D	D		D	E			E	D	D	
Approach Delay (s)			52.7			55.4				43.6		
Approach LOS			D			E				D		

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	116.2	Sum of lost time (s)	14.5
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations							
Volume (vph)	23	116	579	15	1347	157	106
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	5066		4918		
Flt Permitted		0.95	1.00		0.96		
Satd. Flow (perm)		1770	5066		4918		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	126	629	16	1464	171	115
RTOR Reduction (vph)	0	0	2	0	5	0	0
Lane Group Flow (vph)	0	151	643	0	1745	0	0
Turn Type	Prot	Prot					
Protected Phases	1	1	6		7		
Permitted Phases							
Actuated Green, G (s)		10.3	23.4		58.6		
Effective Green, g (s)		10.3	23.4		58.6		
Actuated g/C Ratio		0.09	0.20		0.50		
Clearance Time (s)		4.7	5.1		4.7		
Vehicle Extension (s)		2.0	6.8		8.0		
Lane Grp Cap (vph)		157	1020		2480		
v/s Ratio Prot		c0.09	c0.13		0.35		
v/s Ratio Perm							
v/c Ratio		0.96	0.63		0.70		
Uniform Delay, d1		52.8	42.4		22.1		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		59.8	2.4		1.7		
Delay (s)		112.6	44.9		23.8		
Level of Service		F	D		C		
Approach Delay (s)			57.7		23.8		
Approach LOS			E		C		

Intersection Summary

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	8	71	23	30	24	14	7	62	92	695	1771	36
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	0.95	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1770	1704		1770	1630			1770	5085	3115	
Flt Permitted		0.61	1.00		0.72	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1130	1704		1340	1630			1770	5085	3115	
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)	9	77	25	33	26	15	8	67	100	755	1925	39
RTOR Reduction (vph)	0	0	30	0	0	61	0	0	0	0	1	0
Lane Group Flow (vph)	0	86	28	0	26	29	0	0	100	755	1963	0
Turn Type	Perm	Perm			Perm				Prot		Over	
Protected Phases			8			8			5	2	7	
Permitted Phases	8	8			8							
Actuated Green, G (s)		13.3	13.3		13.3	13.3			7.3	25.8	73.4	
Effective Green, g (s)		13.3	13.3		13.3	13.3			7.3	25.8	73.4	
Actuated g/C Ratio		0.09	0.09		0.09	0.09			0.05	0.18	0.51	
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)		105	158		124	151			90	915	1594	
v/s Ratio Prot			0.02			0.02			0.06	0.15	c0.63	
v/s Ratio Perm		c0.08			0.02							
v/c Ratio		0.82	0.18		0.21	0.19			1.11	0.83	1.23	
Uniform Delay, d1		63.9	60.0		60.2	60.1			68.0	56.6	35.0	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		35.5	0.2		0.3	0.2			128.1	7.4	109.9	
Delay (s)		99.4	60.2		60.5	60.3			196.1	64.1	144.9	
Level of Service		F	E		E	E			F	E	F	
Approach Delay (s)			83.6			60.4				125.0		
Approach LOS			F			E				F		

Intersection Summary			
HCM Average Control Delay	94.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	143.4	Sum of lost time (s)	19.6
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Volume (vph)	115	14	1050	18	1	1538	59	27
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			4976		
Flt Permitted		0.95	1.00			0.89		
Satd. Flow (perm)		1770	5072			4642		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	15	1141	20	1	1672	64	29
RTOR Reduction (vph)	0	0	1	0	0	1	0	0
Lane Group Flow (vph)	0	140	1160	0	0	1765	0	0
Turn Type	Prot	Prot			Perm			
Protected Phases	1	1	6			7		
Permitted Phases					7			
Actuated Green, G (s)		11.3	29.8			73.4		
Effective Green, g (s)		11.3	29.8			73.4		
Actuated g/C Ratio		0.08	0.21			0.51		
Clearance Time (s)		4.7	5.1			4.7		
Vehicle Extension (s)		2.0	6.8			8.0		
Lane Grp Cap (vph)		139	1054			2376		
v/s Ratio Prot		c0.08	c0.23					
v/s Ratio Perm						0.38		
v/c Ratio		1.01	1.10			0.74		
Uniform Delay, d1		66.0	56.8			27.6		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		78.2	59.6			2.1		
Delay (s)		144.3	116.4			29.7		
Level of Service		F	F			C		
Approach Delay (s)			119.4			29.7		
Approach LOS			F			C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	213	3142	25	0	0	0	0	229	87	404	521	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)		5064						3393		1770	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		5064						3393		1770	3539	
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)	232	3415	27	0	0	0	0	249	95	439	566	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	3674	0	0	0	0	0	334	0	439	566	0
Turn Type	Split									Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases												
Actuated Green, G (s)		84.8						19.2		27.8	51.2	
Effective Green, g (s)		84.8						19.2		27.8	51.2	
Actuated g/C Ratio		0.58						0.13		0.19	0.35	
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)		2917						443		334	1231	
v/s Ratio Prot		c0.73						c0.10		c0.25	0.16	
v/s Ratio Perm												
v/c Ratio		1.26						0.75		1.31	0.46	
Uniform Delay, d1		31.2						61.7		59.7	37.3	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		119.6						7.3		161.2	0.4	
Delay (s)		150.8						69.0		220.9	37.7	
Level of Service		F						E		F	D	
Approach Delay (s)		150.8			0.0			69.0			117.7	
Approach LOS		F			A			E			F	

Intersection Summary			
HCM Average Control Delay	138.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	147.2	Sum of lost time (s)	15.4
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
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)	446	3189	45	0	0	0	0	379	140	349	438	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		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		5045						3396		1770	3539	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		5045						3396		1770	3539	
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)	485	3466	49	0	0	0	0	412	152	379	476	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	3999	0	0	0	0	0	555	0	379	476	0
Turn Type	Split									Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases												
Actuated Green, G (s)		88.4						22.4		23.8	50.4	
Effective Green, g (s)		88.4						22.4		23.8	50.4	
Actuated g/C Ratio		0.59						0.15		0.16	0.34	
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)		2973						507		281	1189	
v/s Ratio Prot		c0.79						c0.16		c0.21	0.13	
v/s Ratio Perm												
v/c Ratio		1.35						1.10		1.35	0.40	
Uniform Delay, d1		30.8						63.8		63.1	38.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		157.6						68.6		178.7	0.4	
Delay (s)		188.4						132.4		241.8	38.6	
Level of Service		F						F		F	D	
Approach Delay (s)		188.4			0.0			132.4			128.6	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	173.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.4
Intersection Capacity Utilization	119.3%	ICU Level of Service	H
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)	353	2567	153	0	0	0	0	359	132	112	506	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		0.99						1.00	0.85	1.00	1.00	
Flt Protected		0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5019						3539	1583	1770	3539	
Flt Permitted		0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5019						3539	1583	1770	3539	
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)	384	2790	166	0	0	0	0	390	143	122	550	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	0	3336	0	0	0	0	0	390	133	122	550	0
Turn Type	Split								Perm	Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		83.4						20.9	20.9	8.8	33.9	
Effective Green, g (s)		83.4						20.9	20.9	8.8	33.9	
Actuated g/C Ratio		0.65						0.16	0.16	0.07	0.26	
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)		3257						576	257	121	934	
v/s Ratio Prot		c0.66						c0.11		c0.07	0.16	
v/s Ratio Perm									0.08			
v/c Ratio		1.02						0.68	0.52	1.01	0.59	
Uniform Delay, d1		22.5						50.6	49.2	59.8	41.2	
Progression Factor		1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2		22.3						4.3	3.8	84.0	1.1	
Delay (s)		44.9						55.0	53.0	143.9	42.3	
Level of Service		D						D	D	F	D	
Approach Delay (s)		44.9			0.0			54.4			60.8	
Approach LOS		D			A			D			E	

Intersection Summary			
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	128.5	Sum of lost time (s)	15.4
Intersection Capacity Utilization	95.4%	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)	310	3087	132	0	0	0	0	627	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		0.99						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5035						3539	1583	1770	3539	
Flt Permitted		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5035						3539	1583	1770	3539	
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)	337	3355	143	0	0	0	0	682	239	185	742	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	0	3832	0	0	0	0	0	682	232	185	742	0
Turn Type	Split								Perm	Prot		
Protected Phases	2	2						8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		95.4						26.4	26.4	12.8	43.4	
Effective Green, g (s)		95.4						26.4	26.4	12.8	43.4	
Actuated g/C Ratio		0.64						0.18	0.18	0.09	0.29	
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)		3202						623	279	151	1024	
v/s Ratio Prot		c0.76						c0.19		c0.10	0.21	
v/s Ratio Perm									0.15			
v/c Ratio		1.20						1.09	0.83	1.23	0.72	
Uniform Delay, d1		27.3						61.8	59.7	68.6	47.9	
Progression Factor		1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2		91.9						64.6	20.9	146.3	2.7	
Delay (s)		119.2						126.4	80.5	214.9	50.7	
Level of Service		F						F	F	F	D	
Approach Delay (s)		119.2			0.0			114.5			83.4	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	112.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.4
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
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)	100	59	87	14	30	19	18	233	4	13	422	68
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	109	64	95	15	33	21	20	253	4	14	459	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)								722			817	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	855	821	496	945	855	255	533			258		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	827	791	452	921	827	255	490			258		
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 %	55	79	84	91	89	97	98			99		
cM capacity (veh/h)	242	299	582	165	285	783	1028			1307		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	267	68	277	547
Volume Left	109	15	20	14
Volume Right	95	21	4	74
cSH	324	294	1028	1307
Volume to Capacity	0.83	0.23	0.02	0.01
Queue Length 95th (ft)	177	22	1	1
Control Delay (s)	52.3	20.9	0.8	0.3
Lane LOS	F	C	A	A
Approach Delay (s)	52.3	20.9	0.8	0.3
Approach LOS	F	C		

Intersection Summary			
Average Delay	13.6		
Intersection Capacity Utilization	57.1%	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)	122	0	142	8	63	7	421	667	59	108	468	385
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	133	0	154	9	68	8	458	725	64	117	509	418
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	0.46	0.46	0.85	0.46	0.46	0.38	0.85			0.38		
vC, conflicting volume	2667	2657	718	2779	2834	757	927			789		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3277	3256	575	3521	3640	0	823			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 %	0	100	65	0	0	98	33			81		
cM capacity (veh/h)	0	1	438	0	1	416	682			623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	287	85	1247	1045
Volume Left	133	9	458	117
Volume Right	154	8	64	418
cSH	0	1	682	623
Volume to Capacity	Err	130.56	0.67	0.19
Queue Length 95th (ft)	Err	Err	129	17
Control Delay (s)	Err	Err	20.3	5.8
Lane LOS	F	F	C	A
Approach Delay (s)	Err	Err	20.3	5.8
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	148.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1403	917	0	1792	611	0	0	0	171	0	717
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	4.1	
Lane Util. Factor		0.86	0.86		0.91					0.95	0.95	
Frt		0.97	0.85		0.96					1.00	0.85	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4648	1362		4891					1681	1509	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		4648	1362		4891					1681	1509	
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)	0	1525	997	0	1948	664	0	0	0	186	0	779
RTOR Reduction (vph)	0	47	303	0	61	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	1907	265	0	2551	0	0	0	0	167	796	0
Turn Type			Perm							Split		
Protected Phases		2			6					4	4	
Permitted Phases			2									
Actuated Green, G (s)		46.6	46.6		46.6					44.9	44.9	
Effective Green, g (s)		46.6	46.6		46.6					44.9	44.9	
Actuated g/C Ratio		0.47	0.47		0.47					0.45	0.45	
Clearance Time (s)		4.4	4.4		4.4					4.1	4.1	
Vehicle Extension (s)		4.5	4.5		4.5					4.1	4.1	
Lane Grp Cap (vph)		2166	635		2279					755	678	
v/s Ratio Prot		0.41			c0.52					0.10	c0.53	
v/s Ratio Perm			0.19									
v/c Ratio		0.88	0.42		1.12					0.22	1.17	
Uniform Delay, d1		24.2	17.7		26.7					16.9	27.6	
Progression Factor		1.00	1.00		1.00					1.00	1.00	
Incremental Delay, d2		4.8	0.8		60.2					0.2	93.5	
Delay (s)		29.0	18.5		86.9					17.1	121.1	
Level of Service		C	B		F					B	F	
Approach Delay (s)		26.6			86.9			0.0			103.1	
Approach LOS		C			F			A			F	

Intersection Summary			
HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	82.2%	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	1811	1204	0	2226	615	0	0	0	323	0	472
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	4.1	
Lane Util. Factor		0.86	0.86		0.91					0.95	0.95	
Frt		0.97	0.85		0.97					1.00	0.86	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4646	1362		4920					1681	1516	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		4646	1362		4920					1681	1516	
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)	0	1968	1309	0	2420	668	0	0	0	351	0	513
RTOR Reduction (vph)	0	44	308	0	45	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2487	438	0	3043	0	0	0	0	316	546	0
Turn Type			Perm							Split		
Protected Phases		2			6					4	4	
Permitted Phases			2									
Actuated Green, G (s)		64.6	64.6		64.6					36.9	36.9	
Effective Green, g (s)		64.6	64.6		64.6					36.9	36.9	
Actuated g/C Ratio		0.59	0.59		0.59					0.34	0.34	
Clearance Time (s)		4.4	4.4		4.4					4.1	4.1	
Vehicle Extension (s)		4.5	4.5		4.5					4.1	4.1	
Lane Grp Cap (vph)		2728	800		2889					564	509	
v/s Ratio Prot		0.54			c0.62					0.19	c0.36	
v/s Ratio Perm			0.32									
v/c Ratio		0.91	0.55		1.05					0.56	1.07	
Uniform Delay, d1		20.2	13.8		22.7					29.9	36.6	
Progression Factor		1.00	1.00		1.00					1.00	1.00	
Incremental Delay, d2		5.3	1.2		33.0					1.6	60.8	
Delay (s)		25.5	15.0		55.7					31.5	97.3	
Level of Service		C	B		E					C	F	
Approach Delay (s)		23.1			55.7			0.0			73.3	
Approach LOS		C			E			A			E	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	87.3%	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)	302	1407	0	0	2340	730	1297	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	0.92	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)	328	1529	0	0	2543	793	1410	0	0	215	0	292
RTOR Reduction (vph)	0	0	0	0	0	259	0	0	0	0	0	1
Lane Group Flow (vph)	328	1529	0	0	2543	534	1410	0	0	215	0	291
Turn Type	Prot					Over	Prot			Prot		Over
Protected Phases	5	2			6	4	8			4		5
Permitted Phases												
Actuated Green, G (s)	16.8	78.1			56.1	41.1	41.1			41.1		16.8
Effective Green, g (s)	16.8	78.1			56.1	41.1	41.1			41.1		16.8
Actuated g/C Ratio	0.13	0.60			0.43	0.32	0.32			0.32		0.13
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)	444	3055			2194	500	1085			1085		205
v/s Ratio Prot	0.10	0.30			c0.50	0.34	c0.41			0.06		c0.18
v/s Ratio Perm												
v/c Ratio	0.74	0.50			1.16	1.07	1.30			0.20		1.42
Uniform Delay, d1	54.5	14.8			37.0	44.4	44.4			32.4		56.6
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00		1.00
Incremental Delay, d2	5.5	0.2			77.1	59.5	141.6			0.2		215.1
Delay (s)	60.0	15.0			114.1	104.0	186.1			32.6		271.7
Level of Service	E	B			F	F	F			C		F
Approach Delay (s)		23.0			111.7			186.1			170.3	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	107.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
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)	493	1900	0	0	2657	488	1351	0	0	831	0	655
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	0.92	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)	536	2065	0	0	2888	530	1468	0	0	903	0	712
RTOR Reduction (vph)	0	0	0	0	0	142	0	0	0	0	0	0
Lane Group Flow (vph)	536	2065	0	0	2888	388	1468	0	0	903	0	712
Turn Type	Prot					Over	Prot			Prot		Over
Protected Phases	5	2			6	4	8			4		5
Permitted Phases												
Actuated Green, G (s)	35.8	94.1			53.1	35.1	35.1			35.1		35.8
Effective Green, g (s)	35.8	94.1			53.1	35.1	35.1			35.1		35.8
Actuated g/C Ratio	0.26	0.67			0.38	0.25	0.25			0.25		0.26
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)	878	3418			1929	397	861			861		405
v/s Ratio Prot	0.16	0.41			c0.57	0.25	c0.43			0.26		c0.45
v/s Ratio Perm												
v/c Ratio	0.61	0.60			1.50	0.98	1.70			1.05		1.76
Uniform Delay, d1	46.0	12.7			43.4	52.1	52.4			52.4		52.1
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00		1.00
Incremental Delay, d2	0.9	0.4			226.5	39.3	322.2			44.2		351.1
Delay (s)	46.8	13.1			269.9	91.3	374.7			96.7		403.2
Level of Service	D	B			F	F	F			F		F
Approach Delay (s)		20.0			242.2			374.7			231.8	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	198.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.2%	ICU Level of Service	H
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	2335	429	602	2790	14	301	11	1147	37	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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.97	
Satd. Flow (prot)	1770	3539	1583	3433	3537		1681	1691	1583		1759	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.97	
Satd. Flow (perm)	1770	3539	1583	3433	3537		1681	1691	1583		1759	
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)	28	2538	466	654	3033	15	327	12	1247	40	17	16
RTOR Reduction (vph)	0	0	84	0	0	0	0	0	358	0	7	0
Lane Group Flow (vph)	28	2538	382	654	3048	0	170	169	889	0	66	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)	4.5	62.1	62.1	23.8	83.4		21.8	21.8	23.8		7.3	
Effective Green, g (s)	4.5	62.1	62.1	23.8	83.4		21.8	21.8	23.8		7.3	
Actuated g/C Ratio	0.03	0.46	0.46	0.17	0.61		0.16	0.16	0.17		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)	58	1611	721	599	2163		269	270	276		94	
v/s Ratio Prot	0.02	c0.72		0.19	0.86		c0.10	0.10	c0.56		c0.04	
v/s Ratio Perm			0.24									
v/c Ratio	0.48	1.58	0.53	1.09	1.41		0.63	0.63	3.22		0.71	
Uniform Delay, d1	64.8	37.2	26.7	56.3	26.5		53.6	53.5	56.3		63.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.3	262.0	1.6	64.3	186.9		7.3	7.0	1008.4		17.8	
Delay (s)	67.1	299.1	28.3	120.6	213.4		60.9	60.5	1064.7		81.3	
Level of Service	E	F	C	F	F		E	E	F		F	
Approach Delay (s)		255.3			197.0			850.1			81.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	340.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	136.4	Sum of lost time (s)	21.4
Intersection Capacity Utilization	153.5%	ICU Level of Service	H
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	2797	423	1349	2797	42	565	11	1265	52	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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.97	
Satd. Flow (prot)	1770	3539	1583	3433	3531		1681	1688	1583		1764	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.97	
Satd. Flow (perm)	1770	3539	1583	3433	3531		1681	1688	1583		1764	
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)	39	3040	460	1466	3040	46	614	12	1375	57	22	18
RTOR Reduction (vph)	0	0	74	0	0	0	0	0	358	0	6	0
Lane Group Flow (vph)	39	3040	386	1466	3086	0	313	313	1017	0	91	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)	6.3	58.8	58.8	25.8	80.3		33.7	33.7	25.8		8.0	
Effective Green, g (s)	6.3	58.8	58.8	25.8	80.3		33.7	33.7	25.8		8.0	
Actuated g/C Ratio	0.04	0.40	0.40	0.17	0.54		0.23	0.23	0.17		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)	75	1409	630	600	1920		384	385	277		96	
v/s Ratio Prot	0.02	c0.86		0.43	0.87		c0.19	0.19	c0.64		c0.05	
v/s Ratio Perm			0.24									
v/c Ratio	0.52	2.16	0.61	2.44	1.61		0.82	0.81	3.67		0.95	
Uniform Delay, d1	69.2	44.4	35.4	61.0	33.7		54.0	54.0	61.0		69.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.0	523.3	2.9	654.5	275.6		14.4	14.2	1210.7		75.2	
Delay (s)	72.2	567.7	38.3	715.5	309.3		68.4	68.2	1271.7		144.9	
Level of Service	E	F	D	F	F		E	E	F		F	
Approach Delay (s)		493.4			440.1			895.2			144.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	545.2	HCM Level of Service	F
HCM Volume to Capacity ratio	2.03		
Actuated Cycle Length (s)	147.7	Sum of lost time (s)	21.4
Intersection Capacity Utilization	175.2%	ICU Level of Service	H
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	2737	119	77	365	0	0	430	510
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			0.92	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					5034		1770	3539			3251	
Flt Permitted					1.00		0.95	1.00			1.00	
Satd. Flow (perm)					5034		1770	3539			3251	
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)	0	0	0	297	2975	129	84	397	0	0	467	554
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	3398	0	84	397	0	0	1012	0
Turn Type				Split			Prot					
Protected Phases				6	6		3	8			4	
Permitted Phases												
Actuated Green, G (s)					88.4		8.3	52.4			40.4	
Effective Green, g (s)					88.4		8.3	52.4			40.4	
Actuated g/C Ratio					0.59		0.06	0.35			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)					2967		98	1236			876	
v/s Ratio Prot					c0.67		c0.05	0.11			c0.31	
v/s Ratio Perm												
v/c Ratio					1.15		0.86	0.32			1.25dr	
Uniform Delay, d1					30.8		70.3	35.8			54.8	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					69.9		46.6	0.1			82.5	
Delay (s)					100.7		116.9	35.9			137.3	
Level of Service					F		F	D			F	
Approach Delay (s)		0.0			100.7			50.1			137.3	
Approach LOS		A			F			D			F	

Intersection Summary			
HCM Average Control Delay	103.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
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)	0	0	0	210	3359	357	118	352	0	0	375	444
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			0.92	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					5003		1770	3539			3251	
Flt Permitted					1.00		0.95	1.00			1.00	
Satd. Flow (perm)					5003		1770	3539			3251	
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)	0	0	0	228	3651	388	128	383	0	0	408	483
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	4259	0	128	383	0	0	888	0
Turn Type				Split			Prot					
Protected Phases				6	6		3	8			4	
Permitted Phases												
Actuated Green, G (s)					95.4		8.3	45.4			33.4	
Effective Green, g (s)					95.4		8.3	45.4			33.4	
Actuated g/C Ratio					0.64		0.06	0.30			0.22	
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)					3182		98	1071			724	
v/s Ratio Prot					c0.85		c0.07	0.11			c0.27	
v/s Ratio Perm												
v/c Ratio					1.34		1.31	0.36			1.33dr	
Uniform Delay, d1					27.3		70.8	40.9			58.3	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					154.5		193.5	0.2			113.9	
Delay (s)					181.8		264.4	41.1			172.2	
Level of Service					F		F	D			F	
Approach Delay (s)		0.0			181.8			97.0			172.2	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM Average Control Delay	172.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	119.3%	ICU Level of Service	H
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)	0	0	0	252	2739	314	98	525	0	0	497	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					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)					4994		1770	3539			3539	1583
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4994		1770	3539			3539	1583
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)	0	0	0	274	2977	341	107	571	0	0	540	137
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	3584	0	107	571	0	0	540	129
Turn Type				Split			Prot					Prot
Protected Phases				6	6		3	8			4	4
Permitted Phases												
Actuated Green, G (s)					104.2		8.8	36.6			23.6	23.6
Effective Green, g (s)					104.2		8.8	36.6			23.6	23.6
Actuated g/C Ratio					0.69		0.06	0.24			0.16	0.16
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)					3469		104	864			557	249
v/s Ratio Prot					c0.72		c0.06	0.16			c0.15	0.08
v/s Ratio Perm												
v/c Ratio					1.03		1.03	0.66			0.97	0.52
Uniform Delay, d1					22.9		70.6	51.1			62.8	58.0
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					24.7		96.2	1.9			30.6	3.8
Delay (s)					47.6		166.8	53.0			93.5	61.8
Level of Service					D		F	D			F	E
Approach Delay (s)		0.0			47.6			71.0			87.0	
Approach LOS		A			D			E			F	

Intersection Summary			
HCM Average Control Delay	56.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	95.4%	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)	0	0	0	325	3236	329	183	699	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)					5000		1770	3539			3539	1583
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					5000		1770	3539			3539	1583
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)	0	0	0	353	3517	358	199	760	0	0	736	175
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	7
Lane Group Flow (vph)	0	0	0	0	4221	0	199	760	0	0	736	168
Turn Type				Split			Prot					Prot
Protected Phases				6	6		3	8			4	4
Permitted Phases												
Actuated Green, G (s)					96.4		13.8	44.4			26.4	26.4
Effective Green, g (s)					96.4		13.8	44.4			26.4	26.4
Actuated g/C Ratio					0.64		0.09	0.30			0.18	0.18
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)					3213		163	1048			623	279
v/s Ratio Prot					c0.84		c0.11	0.21			c0.21	0.11
v/s Ratio Perm												
v/c Ratio					1.31		1.22	0.73			1.18	0.60
Uniform Delay, d1					26.8		68.1	47.3			61.8	57.0
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					143.5		142.1	2.5			97.4	5.6
Delay (s)					170.3		210.2	49.9			159.2	62.5
Level of Service					F		F	D			F	E
Approach Delay (s)		0.0			170.3			83.1			140.6	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM Average Control Delay	152.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.4
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
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	35	2	318	139	61	1106	33	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		0.97			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)		4926			3369	1441	1770	3524		1611
Flt Permitted		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)		4926			3369	1441	1770	3524		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	164	38	2	346	151	66	1202	36	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	12
Lane Group Flow (vph)	0	227	0	0	361	136	66	1238	0	5
Turn Type	Perm					Perm	Prot			custom
Protected Phases		4			2		1	6		
Permitted Phases	4					2				8
Actuated Green, G (s)		19.6			28.6	28.6	4.2	29.3		19.6
Effective Green, g (s)		19.6			28.6	28.6	4.2	29.3		19.6
Actuated g/C Ratio		0.30			0.43	0.43	0.06	0.44		0.30
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)		1458			1455	623	112	1560		477
v/s Ratio Prot					c0.11		0.04	c0.35		
v/s Ratio Perm		0.05				0.09				0.00
v/c Ratio		0.16			0.25	0.22	0.59	0.79		0.01
Uniform Delay, d1		17.2			12.0	11.8	30.2	15.9		16.5
Progression Factor		1.00			1.00	1.00	1.33	0.54		1.00
Incremental Delay, d2		0.0			0.0	0.1	6.5	2.2		0.0
Delay (s)		17.2			12.0	11.9	46.7	10.8		16.5
Level of Service		B			B	B	D	B		B
Approach Delay (s)		17.2			12.0			12.6		
Approach LOS		B			B			B		

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	9.8
Intersection Capacity Utilization	44.0%	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)	104	483	66	15	674	242	56	712	21	24
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		0.98			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)		4954			3373	1441	1770	3524		1611
Flt Permitted		0.99			1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)		4954			3373	1441	1770	3524		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	525	72	16	733	263	61	774	23	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	726	0	0	759	237	61	797	0	8
Turn Type	Perm					Perm	Prot			custom
Protected Phases		4			2		1	6		
Permitted Phases	4					2				8
Actuated Green, G (s)		14.6			18.6	18.6	3.2	18.4		14.6
Effective Green, g (s)		14.6			18.6	18.6	3.2	18.4		14.6
Actuated g/C Ratio		0.29			0.37	0.37	0.06	0.37		0.29
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)		1441			1250	534	113	1292		469
v/s Ratio Prot					c0.23		0.03	c0.23		
v/s Ratio Perm		0.15				0.16				0.00
v/c Ratio		0.50			0.61	0.44	0.54	0.62		0.02
Uniform Delay, d1		14.8			12.8	11.9	22.8	13.0		12.7
Progression Factor		1.00			1.00	1.00	1.30	0.61		1.00
Incremental Delay, d2		0.1			0.6	0.2	2.3	0.6		0.0
Delay (s)		14.9			13.4	12.1	32.0	8.5		12.7
Level of Service		B			B	B	C	A		B
Approach Delay (s)		14.9			13.1			10.1		
Approach LOS		B			B			B		

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	9.8
Intersection Capacity Utilization	56.7%	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)	223	1607	336	0	590	66	74	176	34	86	181	51
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	0.97			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	1.00
Satd. Flow (prot)	1770	4953			5008		1770	3453		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	4953			5008		1770	3453		1770	1863	1583
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)	242	1747	365	0	641	72	80	191	37	93	197	55
RTOR Reduction (vph)	0	31	0	0	14	0	0	17	0	0	0	45
Lane Group Flow (vph)	242	2081	0	0	699	0	80	211	0	93	197	10
Turn Type	Prot						Split			Split		Perm
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	13.6	39.0			21.7		10.0	10.0		13.7	13.7	13.7
Effective Green, g (s)	13.6	39.0			21.7		10.0	10.0		13.7	13.7	13.7
Actuated g/C Ratio	0.18	0.51			0.28		0.13	0.13		0.18	0.18	0.18
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)	313	2515			1415		230	450		316	332	282
v/s Ratio Prot	0.14	c0.42			0.14		0.05	c0.06		0.05	c0.11	
v/s Ratio Perm												0.01
v/c Ratio	0.77	0.83			0.49		0.35	0.47		0.29	0.59	0.03
Uniform Delay, d1	30.1	16.0			23.0		30.4	30.9		27.4	29.0	26.1
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.3	2.6			0.5		0.9	0.8		0.5	2.8	0.1
Delay (s)	40.5	18.6			23.4		31.3	31.7		27.9	31.8	26.1
Level of Service	D	B			C		C	C		C	C	C
Approach Delay (s)		20.9			23.4			31.6			29.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	14.1
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)	1030	2471	681	0	699	82	351	381	75	80	279	174
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	0.97			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	1.00
Satd. Flow (prot)	1770	4921			5005		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	4921			5005		1770	3451		1770	1863	1583
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)	1120	2686	740	0	760	89	382	414	82	87	303	189
RTOR Reduction (vph)	0	33	0	0	9	0	0	11	0	0	0	156
Lane Group Flow (vph)	1120	3393	0	0	840	0	382	485	0	87	303	33
Turn Type	Prot						Split			Split		Perm
Protected Phases	1	6			2		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	60.3	85.5			21.5		23.4	23.4		26.1	26.1	26.1
Effective Green, g (s)	60.3	85.5			21.5		23.4	23.4		26.1	26.1	26.1
Actuated g/C Ratio	0.40	0.57			0.14		0.16	0.16		0.18	0.18	0.18
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)	716	2822			722		278	542		310	326	277
v/s Ratio Prot	c0.63	c0.69			0.17		c0.22	0.14		0.05	c0.16	
v/s Ratio Perm												0.02
v/c Ratio	1.56	1.20			1.16		1.37	0.89		0.28	0.93	0.12
Uniform Delay, d1	44.4	31.8			63.8		62.8	61.6		53.4	60.6	51.8
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	260.7	94.7			88.1		189.5	17.1		0.5	31.7	0.2
Delay (s)	305.1	126.5			151.9		252.3	78.8		53.9	92.3	52.0
Level of Service	F	F			F		F	E		D	F	D
Approach Delay (s)		170.5			151.9			154.3			73.4	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	157.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	149.1	Sum of lost time (s)	12.9
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
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	51	0	0	0	0	919	553	154	1614	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	0.97						0.94		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	4930						4799		1770	5085	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	1770	4930						4799		1770	5085	
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)	259	216	55	0	0	0	0	999	601	167	1754	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	162	0	0	0	0
Lane Group Flow (vph)	259	261	0	0	0	0	0	1438	0	167	1754	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.5	13.5						22.4		6.3	32.4	
Effective Green, g (s)	13.5	13.5						22.4		6.3	32.4	
Actuated g/C Ratio	0.25	0.25						0.41		0.12	0.60	
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)	439	1223						1976		205	3029	
v/s Ratio Prot	c0.15	0.05						c0.30		c0.09	0.34	
v/s Ratio Perm												
v/c Ratio	0.59	0.21						0.73		0.81	0.58	
Uniform Delay, d1	18.0	16.2						13.4		23.5	6.8	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.1						1.5		20.4	0.3	
Delay (s)	20.0	16.3						14.9		43.9	7.1	
Level of Service	C	B						B		D	A	
Approach Delay (s)		18.1			0.0			14.9			10.3	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	62.3%	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)	220	920	219	0	0	0	0	910	1450	330	1569	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	0.97						0.91		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	1770	4939						4617		1770	5085	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	1770	4939						4617		1770	5085	
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)	239	1000	238	0	0	0	0	989	1576	359	1705	0
RTOR Reduction (vph)	0	30	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	239	1208	0	0	0	0	0	2548	0	359	1705	0
Turn Type	Split									Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases												
Actuated Green, G (s)	28.9	28.9						65.6		23.3	92.6	
Effective Green, g (s)	28.9	28.9						65.6		23.3	92.6	
Actuated g/C Ratio	0.22	0.22						0.50		0.18	0.71	
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)	393	1098						2330		317	3622	
v/s Ratio Prot	0.14	c0.24						c0.55		c0.20	0.34	
v/s Ratio Perm												
v/c Ratio	0.61	1.10						1.90dr		1.13	0.47	
Uniform Delay, d1	45.5	50.6						32.2		53.4	8.1	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.7	58.8						49.7		91.3	0.1	
Delay (s)	48.1	109.3						81.9		144.7	8.2	
Level of Service	D	F						F		F	A	
Approach Delay (s)		99.4			0.0			81.9			32.0	
Approach LOS		F			A			F			C	

Intersection Summary			
HCM Average Control Delay	69.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
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)	0	0	0	316	617	57	44	293	0	0	829	85
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	0.99		1.00	1.00			0.99	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				1610	3342		1770	3539			3490	
Flt Permitted				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (perm)				1610	3342		1770	3539			3490	
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)	0	0	0	343	671	62	48	318	0	0	901	92
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	309	759	0	48	318	0	0	984	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				19.6	19.6		3.5	28.6			29.3	
Effective Green, g (s)				19.6	19.6		3.5	28.6			29.3	
Actuated g/C Ratio				0.30	0.30		0.05	0.43			0.44	
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)				477	989		94	1529			1545	
v/s Ratio Prot							c0.03	0.09			c0.28	
v/s Ratio Perm				0.19	0.23							
v/c Ratio				0.65	0.77		0.51	0.21			0.64	
Uniform Delay, d1				20.3	21.2		30.5	11.7			14.3	
Progression Factor				1.00	1.00		0.59	0.45			1.00	
Incremental Delay, d2				2.3	3.3		1.9	0.0			0.6	
Delay (s)				22.6	24.5		19.9	5.3			15.0	
Level of Service				C	C		B	A			B	
Approach Delay (s)		0.0			23.9			7.2			15.0	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	13.8
Intersection Capacity Utilization	59.2%	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)	0	0	0	254	429	93	67	734	0	0	503	75
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			0.98	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				1610	3296		1770	3539			3470	
Flt Permitted				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (perm)				1610	3296		1770	3539			3470	
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)	0	0	0	276	466	101	73	798	0	0	547	82
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	0	0	248	568	0	73	798	0	0	613	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				14.6	14.6		3.4	18.6			18.4	
Effective Green, g (s)				14.6	14.6		3.4	18.6			18.4	
Actuated g/C Ratio				0.29	0.29		0.07	0.37			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)				468	959		120	1311			1272	
v/s Ratio Prot							0.04	c0.23			c0.18	
v/s Ratio Perm				0.15	0.17							
v/c Ratio				0.53	0.59		0.61	0.61			0.48	
Uniform Delay, d1				14.9	15.3		22.8	12.8			12.2	
Progression Factor				1.00	1.00		0.74	0.78			1.00	
Incremental Delay, d2				0.5	0.7		5.2	0.5			0.1	
Delay (s)				15.4	15.9		22.1	10.5			12.3	
Level of Service				B	B		C	B			B	
Approach Delay (s)		0.0			15.8			11.4			12.3	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	14.7
Intersection Capacity Utilization	46.3%	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	260	1	0	693	11	0	0	56	0	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	283	1	0	753	12	0	0	61	0	0	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)		471										
pX, platoon unblocked												
vC, conflicting volume	765			284			660	1048	142	901	1043	383
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	765			284			660	1048	142	901	1043	383
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	97
cM capacity (veh/h)	844			1276			339	226	880	217	228	615

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	188	95	502	263	61	17
Volume Left	0	0	0	0	0	0
Volume Right	0	1	0	12	61	17
cSH	1700	1700	1700	1700	880	615
Volume to Capacity	0.11	0.06	0.30	0.15	0.07	0.03
Queue Length 95th (ft)	0	0	0	0	6	2
Control Delay (s)	0.0	0.0	0.0	0.0	9.4	11.0
Lane LOS					A	B
Approach Delay (s)	0.0		0.0		9.4	11.0
Approach LOS					A	B

Intersection Summary			
Average Delay	0.7		
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)	0	767	31	0	643	54	0	0	51	0	0	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	834	34	0	699	59	0	0	55	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	758			867			1200	1608	434	1145	1596	379
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	758			867			1200	1608	434	1145	1596	379
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	90	100	100	95
cM capacity (veh/h)	849			772			134	104	570	139	106	619

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	556	312	466	292	55	28
Volume Left	0	0	0	0	0	0
Volume Right	0	34	0	59	55	28
cSH	1700	1700	1700	1700	570	619
Volume to Capacity	0.33	0.18	0.27	0.17	0.10	0.05
Queue Length 95th (ft)	0	0	0	0	8	4
Control Delay (s)	0.0	0.0	0.0	0.0	12.0	11.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		12.0	11.1
Approach LOS					B	B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	191	97	243	516	90	136	678	52	201	438	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	0.98		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	3361		3433	3460		3433	3968		3433	3946	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3361		3433	3460		3433	3968		3433	3946	
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)	65	208	105	264	561	98	148	737	57	218	476	58
RTOR Reduction (vph)	0	76	0	0	16	0	0	7	0	0	10	0
Lane Group Flow (vph)	65	237	0	264	643	0	148	787	0	218	524	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.0	15.7		10.0	21.7		7.0	17.5		7.7	18.2	
Effective Green, g (s)	4.0	15.7		10.0	21.7		7.0	17.5		7.7	18.2	
Actuated g/C Ratio	0.06	0.23		0.14	0.31		0.10	0.25		0.11	0.26	
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)	102	764		497	1087		348	1005		383	1039	
v/s Ratio Prot	c0.04	0.07		c0.08	c0.19		0.04	c0.20		c0.06	0.13	
v/s Ratio Perm												
v/c Ratio	0.64	0.31		0.53	0.59		0.43	0.78		0.57	0.50	
Uniform Delay, d1	31.8	22.2		27.4	20.0		29.2	24.0		29.1	21.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2	0.1		0.5	0.6		0.3	3.7		1.2	0.1	
Delay (s)	41.1	22.3		27.9	20.5		29.5	27.8		30.3	21.8	
Level of Service	D	C		C	C		C	C		C	C	
Approach Delay (s)		25.5			22.7			28.0			24.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.9%	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)	85	635	130	260	433	114	216	725	74	388	689	44
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	0.97		1.00	0.97		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	3449		3433	3429		3433	3956		3433	3975	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3449		3433	3429		3433	3956		3433	3975	
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)	92	690	141	283	471	124	235	788	80	422	749	48
RTOR Reduction (vph)	0	19	0	0	25	0	0	9	0	0	5	0
Lane Group Flow (vph)	92	812	0	283	570	0	235	859	0	422	792	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.1	24.0		9.6	27.5		8.9	21.3		11.0	23.4	
Effective Green, g (s)	6.1	24.0		9.6	27.5		8.9	21.3		11.0	23.4	
Actuated g/C Ratio	0.07	0.29		0.11	0.33		0.11	0.25		0.13	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)	128	984		392	1121		363	1002		449	1106	
v/s Ratio Prot	0.05	c0.24		c0.08	0.17		0.07	c0.22		c0.12	0.20	
v/s Ratio Perm												
v/c Ratio	0.72	0.82		0.72	0.51		0.65	0.86		0.94	0.72	
Uniform Delay, d1	38.2	28.1		36.0	22.8		36.1	30.0		36.2	27.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.8	5.4		5.5	0.1		3.0	7.1		27.3	1.9	
Delay (s)	53.0	33.5		41.4	23.0		39.1	37.0		63.5	29.2	
Level of Service	D	C		D	C		D	D		E	C	
Approach Delay (s)		35.5			28.9			37.5			41.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	18.2
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
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)	14	24	37	3	22	212	139	146	11	64	20	27
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				1986			1993		
Flt Permitted		0.95	1.00				0.74			0.94		
Satd. Flow (perm)		1770	1583				1503			1888		
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)	15	26	40	3	24	230	151	159	12	70	22	29
RTOR Reduction (vph)	0	0	2	0	0	0	9	0	0	6	0	0
Lane Group Flow (vph)	0	41	41	0	0	0	555	0	0	127	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)		5.4	5.4				42.8			42.8		
Effective Green, g (s)		5.4	5.4				42.8			42.8		
Actuated g/C Ratio		0.04	0.04				0.29			0.29		
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)		64	57				433			543		
v/s Ratio Prot		0.02										
v/s Ratio Perm			c0.03				c0.37			0.07		
v/c Ratio		0.64	0.72				1.28			0.23		
Uniform Delay, d1		70.7	70.9				53.0			40.4		
Progression Factor		1.00	1.00				1.00			1.00		
Incremental Delay, d2		15.2	31.3				143.3			0.4		
Delay (s)		85.9	102.2				196.2			40.8		
Level of Service		F	F				F			D		
Approach Delay (s)		94.2					196.2			40.8		
Approach LOS		F					F			D		

Intersection Summary			
HCM Average Control Delay	197.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	148.7	Sum of lost time (s)	21.5
Intersection Capacity Utilization	126.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	SER2	NWL2	NWL	NWT	NWR
Lane Configurations								
Volume (vph)	55	2395	226	37	69	105	3196	20
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	5010				1770	5080	
Flt Permitted	0.95	1.00				0.95	1.00	
Satd. Flow (perm)	1770	5010				1770	5080	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	2603	246	40	75	114	3474	22
RTOR Reduction (vph)	0	1	0	0	0	0	1	0
Lane Group Flow (vph)	60	2888	0	0	0	189	3495	0
Turn Type	Prot				Prot	Prot		
Protected Phases	1	6			5	5	2	
Permitted Phases								
Actuated Green, G (s)	6.7	67.2				11.8	72.3	
Effective Green, g (s)	6.7	67.2				11.8	72.3	
Actuated g/C Ratio	0.05	0.45				0.08	0.49	
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)	80	2264				140	2470	
v/s Ratio Prot	0.03	0.58				c0.11	c0.69	
v/s Ratio Perm								
v/c Ratio	0.75	1.28				1.35	1.42	
Uniform Delay, d1	70.2	40.7				68.4	38.2	
Progression Factor	1.00	1.00				1.00	1.00	
Incremental Delay, d2	29.0	127.6				197.1	189.3	
Delay (s)	99.2	168.3				265.6	227.5	
Level of Service	F	F				F	F	
Approach Delay (s)		166.9					229.4	
Approach LOS		F					F	

Intersection Summary

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	SEL	SET
Lane Configurations												
Volume (vph)	28	7	29	304	40	48	17	67	4	12	65	4381
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			2049			1770	5066
Flt Permitted		0.95	1.00		0.65			0.95			0.95	1.00
Satd. Flow (perm)		1770	1583		1358			1957			1770	5066
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)	30	8	32	330	43	52	18	73	4	13	71	4762
RTOR Reduction (vph)	0	0	0	0	3	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	38	32	0	422	0	0	105	0	0	71	4888
Turn Type	Split		Perm	Perm			Perm				Prot	
Protected Phases	3	3			4			4			1	6
Permitted Phases			3	4			4					
Actuated Green, G (s)		5.3	5.3		34.8			34.8			6.8	77.2
Effective Green, g (s)		5.3	5.3		34.8			34.8			6.8	77.2
Actuated g/C Ratio		0.04	0.04		0.23			0.23			0.05	0.52
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)		63	56		318			458			81	2632
v/s Ratio Prot		c0.02									0.04	c0.96
v/s Ratio Perm			0.02		c0.31			0.05				
v/c Ratio		0.60	0.57		1.33			0.23			0.88	1.86
Uniform Delay, d1		70.6	70.5		56.9			46.0			70.5	35.7
Progression Factor		1.00	1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2		10.7	8.5		167.3			0.4			58.7	387.1
Delay (s)		81.3	79.0		224.2			46.5			129.2	422.8
Level of Service		F	E		F			D			F	F
Approach Delay (s)		80.2			224.2			46.5				418.6
Approach LOS		F			F			D				F

Intersection Summary			
HCM Average Control Delay	320.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	148.6	Sum of lost time (s)	27.4
Intersection Capacity Utilization	147.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SER	SER2	NWL2	NWL	NWT	NWR
Lane Configurations						
Volume (vph)	96	20	112	50	3480	47
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	5075	
Flt Permitted				0.95	1.00	
Satd. Flow (perm)				1770	5075	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	22	122	54	3783	51
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	176	3833	0
Turn Type			Prot	Prot		
Protected Phases			5	5	2	
Permitted Phases						
Actuated Green, G (s)				9.8	80.2	
Effective Green, g (s)				9.8	80.2	
Actuated g/C Ratio				0.07	0.54	
Clearance Time (s)				5.2	5.9	
Vehicle Extension (s)				2.0	4.3	
Lane Grp Cap (vph)				117	2739	
v/s Ratio Prot				c0.10	c0.76	
v/s Ratio Perm						
v/c Ratio				1.50	1.40	
Uniform Delay, d1				69.4	34.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				266.1	182.0	
Delay (s)				335.5	216.2	
Level of Service				F	F	
Approach Delay (s)					221.5	
Approach LOS					F	

Intersection Summary

Movement	WBL2	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	74	839	1309	128	232	768	890	249
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	0.99		1.00	1.00	0.97	
Flt Protected		0.95	0.99		0.95	1.00	1.00	
Satd. Flow (prot)		1725	4709		1770	5085	4918	
Flt Permitted		0.95	0.99		0.95	1.00	1.00	
Satd. Flow (perm)		1725	4709		1770	5085	4918	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	912	1423	139	252	835	967	271
RTOR Reduction (vph)	0	8	12	0	0	0	27	0
Lane Group Flow (vph)	0	619	1915	0	252	835	1211	0
Turn Type	Split	Split			Prot			
Protected Phases	8	8	8		5	2	6	
Permitted Phases								
Actuated Green, G (s)		29.1	29.1		10.3	32.0	18.0	
Effective Green, g (s)		29.1	29.1		10.3	32.0	18.0	
Actuated g/C Ratio		0.42	0.42		0.15	0.46	0.26	
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)		721	1969		262	2338	1272	
v/s Ratio Prot		0.36	c0.41		c0.14	0.16	c0.25	
v/s Ratio Perm								
v/c Ratio		0.86	0.97		0.96	0.36	0.95	
Uniform Delay, d1		18.4	19.9		29.5	12.2	25.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		10.0	14.3		44.6	0.0	15.0	
Delay (s)		28.4	34.2		74.1	12.2	40.4	
Level of Service		C	C		E	B	D	
Approach Delay (s)			32.8			26.5	40.4	
Approach LOS			C			C	D	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	12.2
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL2	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	51	619	1038	242	331	839	1225	280
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	0.98		1.00	1.00	0.97	
Flt Protected		0.95	0.99		0.95	1.00	1.00	
Satd. Flow (prot)		1725	4657		1770	5085	4944	
Flt Permitted		0.95	0.99		0.95	1.00	1.00	
Satd. Flow (perm)		1725	4657		1770	5085	4944	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	673	1128	263	360	912	1332	304
RTOR Reduction (vph)	0	5	30	0	0	0	31	0
Lane Group Flow (vph)	0	521	1563	0	360	912	1605	0
Turn Type	Split	Split			Prot			
Protected Phases	8	8	8		5	2	6	
Permitted Phases								
Actuated Green, G (s)		29.4	29.4		18.3	51.9	29.9	
Effective Green, g (s)		29.4	29.4		18.3	51.9	29.9	
Actuated g/C Ratio		0.33	0.33		0.20	0.58	0.33	
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)		565	1525		361	2939	1646	
v/s Ratio Prot		0.30	c0.34		c0.20	0.18	c0.32	
v/s Ratio Perm								
v/c Ratio		0.92	1.03		1.00	0.31	0.98	
Uniform Delay, d1		29.1	30.2		35.7	9.7	29.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2		20.8	29.7		46.3	0.0	16.5	
Delay (s)		49.9	59.9		82.0	9.8	46.0	
Level of Service		D	E		F	A	D	
Approach Delay (s)			57.4			30.2	46.0	
Approach LOS			E			C	D	

Intersection Summary			
HCM Average Control Delay	46.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	12.2
Intersection Capacity Utilization	88.0%	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)	31	89	19	122	78	144	36	179	62	373	594	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	0.90		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	1813		1770	1681		1770	3403		1770	3481	
Flt Permitted	0.52	1.00		0.68	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	965	1813		1269	1681		1770	3403		1770	3481	
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)	34	97	21	133	85	157	39	195	67	405	646	79
RTOR Reduction (vph)	0	12	0	0	105	0	0	50	0	0	12	0
Lane Group Flow (vph)	34	106	0	133	137	0	39	212	0	405	713	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)	10.0	10.0		10.0	10.0		3.0	13.3		15.4	25.7	
Effective Green, g (s)	10.0	10.0		10.0	10.0		3.0	13.3		15.4	25.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.06	0.25		0.29	0.49	
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)	184	346		242	321		101	864		520	1707	
v/s Ratio Prot		0.06			0.08		0.02	c0.06		c0.23	c0.20	
v/s Ratio Perm	0.04			c0.10								
v/c Ratio	0.18	0.31		0.55	0.43		0.39	0.25		0.78	0.42	
Uniform Delay, d1	17.8	18.2		19.2	18.7		23.8	15.6		16.9	8.6	
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		1.4	0.3		0.9	0.1		6.6	0.1	
Delay (s)	18.0	18.4		20.5	19.0		24.7	15.6		23.6	8.6	
Level of Service	B	B		C	B		C	B		C	A	
Approach Delay (s)		18.3			19.5			16.8			14.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	9.1
Intersection Capacity Utilization	62.6%	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)	123	140	52	164	109	363	42	539	98	293	398	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	0.96		1.00	0.88		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	1787		1770	1648		1770	3457		1770	3464	
Flt Permitted	0.21	1.00		0.60	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	393	1787		1121	1648		1770	3457		1770	3464	
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)	134	152	57	178	118	395	46	586	107	318	433	72
RTOR Reduction (vph)	0	19	0	0	172	0	0	22	0	0	18	0
Lane Group Flow (vph)	134	190	0	178	341	0	46	671	0	318	487	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)	23.9	23.9		23.9	23.9		5.6	19.4		13.0	26.8	
Effective Green, g (s)	23.9	23.9		23.9	23.9		5.6	19.4		13.0	26.8	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.08	0.28		0.19	0.38	
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)	134	610		383	563		142	958		329	1326	
v/s Ratio Prot		0.11			0.21		0.03	c0.19		c0.18	0.14	
v/s Ratio Perm	c0.34			0.16								
v/c Ratio	1.00	0.31		0.46	0.61		0.32	0.70		0.97	0.37	
Uniform Delay, d1	23.0	17.0		18.0	19.1		30.4	22.7		28.3	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	77.7	0.1		0.3	1.3		0.5	1.9		40.1	0.1	
Delay (s)	100.8	17.1		18.4	20.4		30.9	24.6		68.4	15.6	
Level of Service	F	B		B	C		C	C		E	B	
Approach Delay (s)		49.8			19.9			25.0			36.0	
Approach LOS		D			B			C			D	

Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	84.8%	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 (vph)	7	128	49	89	121	232	31	195	118	126	822	164
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	0.96		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	1786		1770	1679		1770	3339		1770	3451	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1786		1770	1679		1770	3339		1770	3451	
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)	8	139	53	97	132	252	34	212	128	137	893	178
RTOR Reduction (vph)	0	18	0	0	82	0	0	88	0	0	19	0
Lane Group Flow (vph)	8	174	0	97	302	0	34	252	0	137	1052	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.0	14.7		5.8	19.5		2.4	19.8		7.5	24.9	
Effective Green, g (s)	1.0	14.7		5.8	19.5		2.4	19.8		7.5	24.9	
Actuated g/C Ratio	0.02	0.23		0.09	0.31		0.04	0.31		0.12	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)	28	412		161	513		67	1036		208	1347	
v/s Ratio Prot	0.00	0.10		c0.05	c0.18		0.02	0.08		c0.08	c0.30	
v/s Ratio Perm												
v/c Ratio	0.29	0.42		0.60	0.59		0.51	0.24		0.66	0.78	
Uniform Delay, d1	31.0	20.9		27.9	18.8		30.1	16.4		26.9	17.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.7		6.2	1.7		5.9	0.1		7.3	3.0	
Delay (s)	36.6	21.6		34.1	20.5		36.1	16.5		34.3	20.1	
Level of Service	D	C		C	C		D	B		C	C	
Approach Delay (s)		22.2			23.2			18.3			21.7	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.6%	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)	14	289	33	138	148	286	51	343	438	189	463	68
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	0.90		1.00	0.92		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	1834		1770	1679		1770	3242		1770	3471	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1834		1770	1679		1770	3242		1770	3471	
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)	15	314	36	150	161	311	55	373	476	205	503	74
RTOR Reduction (vph)	0	6	0	0	82	0	0	309	0	0	14	0
Lane Group Flow (vph)	15	344	0	150	390	0	55	540	0	205	563	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.3	20.4		8.1	27.2		4.3	17.4		10.6	23.7	
Effective Green, g (s)	1.3	20.4		8.1	27.2		4.3	17.4		10.6	23.7	
Actuated g/C Ratio	0.02	0.28		0.11	0.38		0.06	0.24		0.15	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)	32	516		198	630		105	778		259	1135	
v/s Ratio Prot	0.01	0.19		c0.08	c0.23		0.03	c0.17		c0.12	0.16	
v/s Ratio Perm												
v/c Ratio	0.47	0.67		0.76	0.62		0.52	0.69		0.79	0.50	
Uniform Delay, d1	35.3	23.0		31.2	18.4		33.1	25.1		29.9	19.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	3.3		15.2	1.8		4.7	2.7		15.1	0.3	
Delay (s)	45.7	26.3		46.5	20.3		37.8	27.8		45.0	19.9	
Level of Service	D	C		D	C		D	C		D	B	
Approach Delay (s)		27.1			26.6			28.4			26.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	12.0
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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	160	11	66	43	14	34	33	2540	571	147	3401	29
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	1696	1583		1728		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	1696	1583		1728		1770	3539	1583	1770	3539	1583
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)	174	12	72	47	15	37	36	2761	621	160	3697	32
RTOR Reduction (vph)	0	0	68	0	16	0	0	0	100	0	0	2
Lane Group Flow (vph)	92	94	4	0	83	0	36	2761	521	160	3697	30
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)	8.0	8.0	8.0		12.2		5.9	90.4	90.4	10.3	94.8	94.8
Effective Green, g (s)	8.0	8.0	8.0		12.2		5.9	90.4	90.4	10.3	94.8	94.8
Actuated g/C Ratio	0.06	0.06	0.06		0.09		0.04	0.64	0.64	0.07	0.67	0.67
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)	95	96	90		150		74	2269	1015	129	2379	1064
v/s Ratio Prot	0.05	c0.06			c0.05		0.02	0.78		c0.09	c1.04	
v/s Ratio Perm			0.00						0.33			0.02
v/c Ratio	0.97	0.98	0.05		0.56		0.49	1.22	0.51	1.24	1.55	0.03
Uniform Delay, d1	66.4	66.4	62.9		61.8		66.1	25.3	13.5	65.4	23.1	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	81.8	84.7	0.4		4.4		1.8	101.8	0.8	157.6	251.4	0.0
Delay (s)	148.2	151.1	63.2		66.2		67.9	127.1	14.4	222.9	274.5	7.7
Level of Service	F	F	E		E		E	F	B	F	F	A
Approach Delay (s)		125.6			66.2			106.0			270.2	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	189.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	141.0	Sum of lost time (s)	14.8
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
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)	511	20	136	87	23	31	17	3901	308	321	3920	11
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		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.97		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1691	1583		1753		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.97		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1691	1583		1753		1770	3539	1583	1770	3539	1583
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)	555	22	148	95	25	34	18	4240	335	349	4261	12
RTOR Reduction (vph)	0	0	132	0	7	0	0	0	38	0	0	0
Lane Group Flow (vph)	289	288	16	0	147	0	18	4240	297	349	4261	12
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)	15.5	15.5	15.5		16.9		4.1	76.7	76.7	17.3	89.9	89.9
Effective Green, g (s)	15.5	15.5	15.5		16.9		4.1	76.7	76.7	17.3	89.9	89.9
Actuated g/C Ratio	0.11	0.11	0.11		0.12		0.03	0.52	0.52	0.12	0.61	0.61
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)	178	179	167		202		50	1853	829	209	2172	971
v/s Ratio Prot	c0.17	0.17			c0.08		0.01	c1.20		c0.20	c1.20	
v/s Ratio Perm			0.01						0.19			0.01
v/c Ratio	1.62	1.61	0.09		0.73		0.36	2.29	0.36	1.67	1.96	0.01
Uniform Delay, d1	65.5	65.5	59.2		62.6		69.9	34.9	20.5	64.6	28.3	11.0
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	304.9	298.4	0.4		12.3		1.6	581.4	0.5	321.6	434.5	0.0
Delay (s)	370.4	363.9	59.6		74.8		71.5	616.3	21.0	386.2	462.8	11.0
Level of Service	F	F	E		E		E	F	C	F	F	B
Approach Delay (s)		304.4			74.8			570.7			455.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	491.4	HCM Level of Service	F
HCM Volume to Capacity ratio	2.01		
Actuated Cycle Length (s)	146.5	Sum of lost time (s)	25.4
Intersection Capacity Utilization	159.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
61: Jefferson St & Beale Ave

10/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	189	0	142	0	271	0	0	466	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	205	0	154	0	295	0	0	507	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	808	801	253	548	801	147	507			295		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	808	801	253	548	801	147	507			295		
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	82	100			100		
cM capacity (veh/h)	224	316	746	419	316	873	1054			1264		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	137	223	147	147	338	169
Volume Left	137	68	0	0	0	0
Volume Right	0	154	0	0	0	0
cSH	419	655	1700	1700	1700	1700
Volume to Capacity	0.33	0.34	0.09	0.09	0.20	0.10
Queue Length 95th (ft)	35	38	0	0	0	0
Control Delay (s)	17.7	13.3	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	15.0		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	29.1%	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)	0	0	0	111	19	42	0	510	0	0	522	41
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	0	0	121	21	46	0	554	0	0	567	45
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	923	1144	306	838	1166	277	612			554		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	923	1144	306	838	1166	277	612			554		
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	53	89	94	100			100		
cM capacity (veh/h)	193	198	690	259	193	720	963			1012		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	80	107	277	277	378	234
Volume Left	80	40	0	0	0	0
Volume Right	0	46	0	0	0	45
cSH	259	327	1700	1700	1700	1700
Volume to Capacity	0.31	0.33	0.16	0.16	0.22	0.14
Queue Length 95th (ft)	32	35	0	0	0	0
Control Delay (s)	25.0	21.3	0.0	0.0	0.0	0.0
Lane LOS	D	C				
Approach Delay (s)	22.9		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	27.3%	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)	0	1	9	304	1	39	31	511	481	100	727	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)		1634		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)		1634		1681	1686	1583	1770	3539	1583	1770	3538	
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)	0	1	10	330	1	42	34	555	523	109	790	2
RTOR Reduction (vph)	0	10	0	0	0	34	0	0	355	0	0	0
Lane Group Flow (vph)	0	1	0	165	166	8	34	555	168	109	792	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)		0.8		9.5	9.5	9.5	1.8	16.1	16.1	5.2	19.5	
Effective Green, g (s)		0.8		9.5	9.5	9.5	1.8	16.1	16.1	5.2	19.5	
Actuated g/C Ratio		0.02		0.19	0.19	0.19	0.04	0.32	0.32	0.10	0.39	
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)		26		319	320	300	64	1137	509	184	1377	
v/s Ratio Prot		c0.00		0.10	c0.10		0.02	0.16		c0.06	c0.22	
v/s Ratio Perm						0.01			0.11			
v/c Ratio		0.04		0.52	0.52	0.03	0.53	0.49	0.33	0.59	0.58	
Uniform Delay, d1		24.3		18.2	18.2	16.5	23.7	13.7	12.9	21.4	12.0	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3		0.6	0.6	0.0	4.2	0.1	0.1	3.4	0.4	
Delay (s)		24.5		18.8	18.8	16.5	27.9	13.8	13.0	24.8	12.4	
Level of Service		C		B	B	B	C	B	B	C	B	
Approach Delay (s)		24.5			18.6			13.9			13.9	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	18.5
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	26	528	4	69	21	917	234	65	792	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		0.91		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)		1689		1681	1686	1583	1770	3539	1583	1770	3537	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1689		1681	1686	1583	1770	3539	1583	1770	3537	
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)	7	9	28	574	4	75	23	997	254	71	861	4
RTOR Reduction (vph)	0	27	0	0	0	63	0	0	133	0	1	0
Lane Group Flow (vph)	0	17	0	287	291	12	23	997	121	71	864	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)		3.1		9.9	9.9	9.9	1.0	25.5	25.5	3.6	28.1	
Effective Green, g (s)		3.1		9.9	9.9	9.9	1.0	25.5	25.5	3.6	28.1	
Actuated g/C Ratio		0.05		0.16	0.16	0.16	0.02	0.42	0.42	0.06	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)		86		275	275	259	29	1489	666	105	1640	
v/s Ratio Prot		c0.01		0.17	c0.17		0.01	c0.28		c0.04	c0.24	
v/s Ratio Perm						0.01			0.08			
v/c Ratio		0.20		1.04	1.06	0.05	0.79	0.67	0.18	0.68	0.53	
Uniform Delay, d1		27.6		25.3	25.3	21.4	29.7	14.2	11.0	27.9	11.5	
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		66.1	70.4	0.0	79.5	0.9	0.0	12.7	0.1	
Delay (s)		28.0		91.5	95.8	21.4	109.2	15.0	11.1	40.6	11.7	
Level of Service		C		F	F	C	F	B	B	D	B	
Approach Delay (s)		28.0			85.3			16.0			13.9	
Approach LOS		C			F			B			B	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	23.5
Intersection Capacity Utilization	61.6%	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)	37	109	108	270	155	183	355	668	101	166	744	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	0.98		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	4985		1770	5035	
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	4985		1770	5035	
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)	40	118	117	293	168	199	386	726	110	180	809	57
RTOR Reduction (vph)	0	0	92	0	0	137	0	22	0	0	9	0
Lane Group Flow (vph)	40	118	25	293	168	62	386	814	0	180	857	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)	4.3	18.6	18.6	12.0	26.9	26.9	16.0	27.0		11.2	22.2	
Effective Green, g (s)	4.3	18.6	18.6	12.0	26.9	26.9	16.0	27.0		11.2	22.2	
Actuated g/C Ratio	0.05	0.22	0.22	0.14	0.31	0.31	0.19	0.31		0.13	0.26	
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)	89	765	342	247	1107	495	329	1565		231	1300	
v/s Ratio Prot	0.02	0.03		c0.17	c0.05		c0.22	0.16		0.10	c0.17	
v/s Ratio Perm			0.02			0.04						
v/c Ratio	0.45	0.15	0.07	1.19	0.15	0.13	1.17	0.52		0.78	0.66	
Uniform Delay, d1	39.7	27.3	26.8	37.0	21.3	21.1	35.0	24.2		36.2	28.5	
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	1.3	0.2	0.2	117.0	0.0	0.1	105.4	0.6		14.0	1.6	
Delay (s)	41.0	27.5	27.0	154.0	21.4	21.2	140.4	24.8		50.2	30.2	
Level of Service	D	C	C	F	C	C	F	C		D	C	
Approach Delay (s)		29.3			80.2			61.3			33.6	
Approach LOS		C			F			E			C	

Intersection Summary			
HCM Average Control Delay	53.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	76.9%	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)	89	239	257	295	125	162	149	703	223	312	883	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	0.96		1.00	1.00	
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	4902		1770	5061	
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	4902		1770	5061	
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)	97	260	279	321	136	176	162	764	242	339	960	32
RTOR Reduction (vph)	0	0	218	0	0	124	0	63	0	0	4	0
Lane Group Flow (vph)	97	260	61	321	136	52	162	943	0	339	988	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)	7.2	19.0	19.0	13.0	25.4	25.4	10.3	23.6		14.0	27.3	
Effective Green, g (s)	7.2	19.0	19.0	13.0	25.4	25.4	10.3	23.6		14.0	27.3	
Actuated g/C Ratio	0.08	0.22	0.22	0.15	0.29	0.29	0.12	0.27		0.16	0.31	
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)	147	775	347	265	1036	463	210	1333		285	1592	
v/s Ratio Prot	0.05	c0.07		c0.18	0.04		0.09	c0.19		c0.19	c0.20	
v/s Ratio Perm			0.04			0.03						
v/c Ratio	0.66	0.34	0.18	1.21	0.13	0.11	0.77	0.71		1.19	0.62	
Uniform Delay, d1	38.6	28.6	27.5	36.9	22.6	22.4	37.1	28.5		36.4	25.3	
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	7.9	0.5	0.5	124.8	0.0	0.1	14.7	2.2		114.7	1.1	
Delay (s)	46.5	29.1	28.0	161.7	22.6	22.5	51.8	30.7		151.1	26.4	
Level of Service	D	C	C	F	C	C	D	C		F	C	
Approach Delay (s)		31.3			93.1			33.6			58.2	
Approach LOS		C			F			C			E	

Intersection Summary			
HCM Average Control Delay	51.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	21.8
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	242	310	0	271	146	321	574
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	0.95	0.85		0.95		1.00	1.00
Flt Protected	0.97	1.00		1.00		0.95	1.00
Satd. Flow (prot)	3313	1441		3353		1770	3539
Flt Permitted	0.97	1.00		1.00		0.49	1.00
Satd. Flow (perm)	3313	1441		3353		913	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	337	0	295	159	349	624
RTOR Reduction (vph)	113	145	0	69	0	0	0
Lane Group Flow (vph)	298	44	0	385	0	349	624
Turn Type		Perm	Perm			Perm	
Protected Phases	8			2			6
Permitted Phases		8	2			6	
Actuated Green, G (s)	9.4	9.4		22.6		22.6	22.6
Effective Green, g (s)	9.4	9.4		22.6		22.6	22.6
Actuated g/C Ratio	0.24	0.24		0.57		0.57	0.57
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)	779	339		1894		516	2000
v/s Ratio Prot	c0.09			0.11			0.18
v/s Ratio Perm		0.03				c0.38	
v/c Ratio	0.38	0.13		0.20		0.68	0.31
Uniform Delay, d1	12.9	12.1		4.3		6.1	4.6
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.3	0.2		0.1		3.5	0.1
Delay (s)	13.2	12.3		4.3		9.6	4.7
Level of Service	B	B		A		A	A
Approach Delay (s)	12.9			4.3			6.5
Approach LOS	B			A			A

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.1%	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	350	0	739	180	539	585
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	0.92	0.85		0.97		1.00	1.00
Flt Protected	0.98	1.00		1.00		0.95	1.00
Satd. Flow (prot)	3245	1441		3435		1770	3539
Flt Permitted	0.98	1.00		1.00		0.28	1.00
Satd. Flow (perm)	3245	1441		3435		513	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	380	0	803	196	586	636
RTOR Reduction (vph)	155	172	0	11	0	0	0
Lane Group Flow (vph)	194	18	0	988	0	586	636
Turn Type		Perm	Perm			Perm	
Protected Phases	8			2			6
Permitted Phases		8	2			6	
Actuated Green, G (s)	13.6	13.6		120.1		120.1	120.1
Effective Green, g (s)	13.6	13.6		120.1		120.1	120.1
Actuated g/C Ratio	0.10	0.10		0.85		0.85	0.85
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)	311	138		2911		435	3000
v/s Ratio Prot	c0.06			0.29			0.18
v/s Ratio Perm		0.01				c1.14	
v/c Ratio	0.62	0.13		0.34		1.35	0.21
Uniform Delay, d1	61.6	58.6		2.3		10.8	2.0
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	3.8	0.4		0.1		170.9	0.0
Delay (s)	65.4	59.1		2.4		181.7	2.0
Level of Service	E	E		A		F	A
Approach Delay (s)	63.2			2.4			88.2
Approach LOS	E			A			F

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	141.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.9%	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)	137	158	66	275	322	240	103	499	127	259	551	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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.96		1.00	0.94		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	3383		1770	3312		1770	4930		1770	4945	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3383		1770	3312		1770	4930		1770	4945	
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)	149	172	72	299	350	261	112	542	138	282	599	135
RTOR Reduction (vph)	0	50	0	0	142	0	0	46	0	0	35	0
Lane Group Flow (vph)	149	194	0	299	469	0	112	634	0	282	699	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.9	14.2		14.2	17.5		8.4	17.8		14.2	23.6	
Effective Green, g (s)	10.9	14.2		14.2	17.5		8.4	17.8		14.2	23.6	
Actuated g/C Ratio	0.14	0.19		0.19	0.23		0.11	0.23		0.19	0.31	
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)	253	629		329	759		195	1149		329	1528	
v/s Ratio Prot	0.08	0.06		c0.17	c0.14		0.06	c0.13		c0.16	0.14	
v/s Ratio Perm												
v/c Ratio	0.59	0.31		0.91	0.62		0.57	0.55		0.86	0.46	
Uniform Delay, d1	30.7	26.9		30.5	26.4		32.3	25.8		30.1	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.3		27.4	1.5		4.0	0.6		19.2	0.2	
Delay (s)	34.1	27.1		57.9	28.0		36.4	26.4		49.3	21.5	
Level of Service	C	C		E	C		D	C		D	C	
Approach Delay (s)		29.8			37.8			27.8			29.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	16.0
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)	145	469	115	239	271	252	121	670	223	649	720	80
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	0.97		1.00	0.93		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	3435		1770	3284		1770	4895		1770	5009	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3435		1770	3284		1770	4895		1770	5009	
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)	158	510	125	260	295	274	132	728	242	705	783	87
RTOR Reduction (vph)	0	15	0	0	115	0	0	42	0	0	9	0
Lane Group Flow (vph)	158	620	0	260	454	0	132	928	0	705	861	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.3	29.0		18.0	31.7		15.1	30.4		50.0	65.3	
Effective Green, g (s)	15.3	29.0		18.0	31.7		15.1	30.4		50.0	65.3	
Actuated g/C Ratio	0.11	0.20		0.13	0.22		0.11	0.21		0.35	0.46	
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)	189	695		222	726		186	1038		617	2281	
v/s Ratio Prot	0.09	c0.18		c0.15	c0.14		0.07	c0.19		c0.40	0.17	
v/s Ratio Perm												
v/c Ratio	0.84	0.89		1.17	0.62		0.71	0.89		1.14	0.38	
Uniform Delay, d1	62.8	55.7		62.7	50.5		62.0	54.9		46.7	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.1	13.7		114.4	1.7		11.7	10.0		82.4	0.1	
Delay (s)	88.9	69.4		177.1	52.2		73.8	64.9		129.1	25.8	
Level of Service	F	E		F	D		E	E		F	C	
Approach Delay (s)		73.3			91.3			66.0			72.0	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM Average Control Delay	74.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	143.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
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	82	46	56
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	0.92
Hourly flow rate (vph)	20	105	98	46	25	50	23	85	63	89	50	61
Approach Volume (veh/h)			293					310				
Crossing Volume (veh/h)			1103					1041				
High Capacity (veh/h)			572					602				
High v/c (veh/h)			0.51					0.51				
Low Capacity (veh/h)			439					465				
Low v/c (veh/h)			0.67					0.67				

Intersection Summary				
Maximum v/c High	1.00			
Maximum v/c Low	1.22			
Intersection Capacity Utilization	122.9%	ICU Level of Service	H	

Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	SEL2	SEL	SET	SER
Right Turn Channelized												
Volume (veh/h)	441	67	7	2	55	433	266	209	300	47	8	103
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	0.92
Hourly flow rate (vph)	479	73	8	2	60	471	289	227	326	51	9	112
Approach Volume (veh/h)	671					1049					502	
Crossing Volume (veh/h)	766					351					1029	
High Capacity (veh/h)	753					1051					608	
High v/c (veh/h)	0.89					1.00					0.83	
Low Capacity (veh/h)	596					859					470	
Low v/c (veh/h)	1.13					1.22					1.07	

Intersection Summary

Movement	SER2
Right Turn Channelized	
Volume (veh/h)	4
Peak Hour Factor	0.92
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)	83	248	112	84	45	53	39	115	57	110	100	162
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	0.92
Hourly flow rate (vph)	90	270	122	91	49	58	42	125	62	120	109	176
Approach Volume (veh/h)			622					407				
Crossing Volume (veh/h)			1209#					1592#				
High Capacity (veh/h)			524					380				
High v/c (veh/h)			1.19					1.07				
Low Capacity (veh/h)			399					279				
Low v/c (veh/h)			1.56					1.46				

Intersection Summary			
Maximum v/c High	1.69		
Maximum v/c Low	2.17		
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)	655	60	15	6	63	559	253	311	217	22	3	150
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	0.92
Hourly flow rate (vph)	712	65	16	7	68	608	275	338	236	24	3	163
Approach Volume (veh/h)	1078					1296					601	
Crossing Volume (veh/h)	968					662					1291#	
High Capacity (veh/h)	639					820					489	
High v/c (veh/h)	1.69					1.58					1.23	
Low Capacity (veh/h)	497					654					370	
Low v/c (veh/h)	2.17					1.98					1.63	

Intersection Summary

Movement	SER2
Right Turn Channelized	
Volume (veh/h)	161
Peak Hour Factor	0.92
Hourly flow rate (vph)	175
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	777	11	19	457	19	7	8	3	10	15	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	0.99		1.00	0.96		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	5075		1770	5054		1770	1793		1770	1701	
Flt Permitted	0.45	1.00		0.33	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	839	5075		606	5054		1863	1793		1863	1701	
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)	36	845	12	21	497	21	8	9	3	11	16	22
RTOR Reduction (vph)	0	2	0	0	7	0	0	3	0	0	20	0
Lane Group Flow (vph)	36	855	0	21	511	0	8	9	0	11	18	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.3	12.3		12.3	12.3		1.7	1.7		1.7	1.7	
Effective Green, g (s)	12.3	12.3		12.3	12.3		1.7	1.7		1.7	1.7	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		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)	469	2837		339	2826		144	139		144	131	
v/s Ratio Prot		c0.17			0.10			0.01			c0.01	
v/s Ratio Perm	0.04			0.03			0.00			0.01		
v/c Ratio	0.08	0.30		0.06	0.18		0.06	0.07		0.08	0.14	
Uniform Delay, d1	2.2	2.6		2.2	2.4		9.4	9.4		9.4	9.5	
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		0.2	0.5	
Delay (s)	2.3	2.6		2.3	2.4		9.6	9.6		9.6	9.9	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		2.6			2.4			9.6			9.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	2.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	22.0	Sum of lost time (s)	8.0
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 (vph)	62	846	239	200	1074	14	99	619	211	11	550	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	0.97		1.00	1.00		1.00	0.96		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	4917		1770	5076		1770	1792		1770	1848	
Flt Permitted	0.22	1.00		0.22	1.00		0.21	1.00		0.21	1.00	
Satd. Flow (perm)	414	4917		414	5076		392	1792		392	1848	
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)	67	920	260	217	1167	15	108	673	229	12	598	33
RTOR Reduction (vph)	0	102	0	0	3	0	0	27	0	0	5	0
Lane Group Flow (vph)	67	1078	0	217	1179	0	108	875	0	12	626	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.0	18.0		18.0	18.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)	18.0	18.0		18.0	18.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.42	0.42		0.42	0.42	
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)	166	1967		166	2030		166	757		166	780	
v/s Ratio Prot		0.22			0.23			c0.49			0.34	
v/s Ratio Perm	0.16			c0.52			0.28			0.03		
v/c Ratio	0.40	0.55		1.31	0.58		0.65	1.16		0.07	0.80	
Uniform Delay, d1	9.7	10.4		13.5	10.6		10.4	13.0		7.7	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.3		174.8	0.4		8.8	84.7		0.2	6.0	
Delay (s)	11.3	10.7		188.3	11.0		19.2	97.7		7.9	17.4	
Level of Service	B	B		F	B		B	F		A	B	
Approach Delay (s)		10.7			38.5			89.3			17.2	
Approach LOS		B			D			F			B	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: California Ave & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	276	61	295	334	164	130	1678	178	177	1354	243
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	0.99		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)	3433	4948		3433	4834		1770	5012		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	4948		3433	4834		1770	5012		1770	5085	1583
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)	212	300	66	321	363	178	141	1824	193	192	1472	264
RTOR Reduction (vph)	0	40	0	0	101	0	0	14	0	0	0	132
Lane Group Flow (vph)	212	326	0	321	440	0	141	2003	0	192	1472	132
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	6.8	14.6		8.8	16.6		9.5	36.2		10.3	37.0	37.0
Effective Green, g (s)	6.8	14.6		8.8	16.6		9.5	36.2		10.3	37.0	37.0
Actuated g/C Ratio	0.08	0.17		0.10	0.19		0.11	0.41		0.12	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)	266	825		345	916		192	2071		208	2148	669
v/s Ratio Prot	0.06	0.07		c0.09	c0.09		0.08	c0.40		c0.11	0.29	
v/s Ratio Perm												0.08
v/c Ratio	0.80	0.40		0.93	0.48		0.73	0.97		0.92	0.69	0.20
Uniform Delay, d1	39.7	32.6		39.1	31.7		37.8	25.1		38.3	20.6	15.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.2	0.7		30.8	0.9		11.8	13.1		40.8	1.2	0.3
Delay (s)	54.0	33.3		69.9	32.5		49.6	38.2		79.1	21.8	16.3
Level of Service	D	C		E	C		D	D		E	C	B
Approach Delay (s)		40.9			46.4			38.9			26.7	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	13.3
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
23: California Ave & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	374	630	208	479	417	158	131	1625	257	283	1853	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	4896		3433	4875		1770	4981		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	4896		3433	4875		1770	4981		1770	5085	1583
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)	407	685	226	521	453	172	142	1766	279	308	2014	332
RTOR Reduction (vph)	0	49	0	0	57	0	0	18	0	0	0	94
Lane Group Flow (vph)	407	862	0	521	568	0	142	2027	0	308	2014	238
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	16.3	19.8		16.8	20.3		11.0	46.4		19.3	54.7	54.7
Effective Green, g (s)	16.3	19.8		16.8	20.3		11.0	46.4		19.3	54.7	54.7
Actuated g/C Ratio	0.14	0.17		0.14	0.17		0.09	0.39		0.16	0.46	0.46
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)	466	808		481	825		162	1926		285	2318	722
v/s Ratio Prot	0.12	c0.18		c0.15	0.12		0.08	c0.41		c0.17	0.40	
v/s Ratio Perm												0.15
v/c Ratio	0.87	1.07		1.08	0.69		0.88	1.05		1.08	0.87	0.33
Uniform Delay, d1	50.8	50.1		51.6	46.9		53.8	36.8		50.4	29.4	20.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.9	50.9		65.3	3.2		36.5	36.0		76.5	4.1	0.6
Delay (s)	66.8	101.0		116.9	50.1		90.3	72.8		126.8	33.6	21.5
Level of Service	E	F		F	D		F	E		F	C	C
Approach Delay (s)		90.4			80.5			73.9			42.9	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	66.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Hayden Ct & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	2	141	0	53	11	1883	104	284	1628	5
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		4.2	4.2	4.2	3.7	4.9		3.7	4.9	4.9
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt		0.85		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1794		1681	1905	1583	1770	5045		1770	5085	1583
Flt Permitted		1.00		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1794		1681	1905	1583	1770	5045		1770	5085	1583
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)	0	0	2	153	0	58	12	2047	113	309	1770	5
RTOR Reduction (vph)	0	2	0	0	0	51	0	4	0	0	0	1
Lane Group Flow (vph)	0	0	0	76	77	7	12	2156	0	309	1770	4
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)		1.4		12.7	12.7	12.7	1.2	59.5		22.4	80.7	80.7
Effective Green, g (s)		1.4		12.7	12.7	12.7	1.2	59.5		22.4	80.7	80.7
Actuated g/C Ratio		0.01		0.11	0.11	0.11	0.01	0.53		0.20	0.72	0.72
Clearance Time (s)		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	2.0	5.2		2.0	5.2	5.2
Lane Grp Cap (vph)		22		190	215	179	19	2668		352	3648	1136
v/s Ratio Prot		c0.00		c0.05	0.04		0.01	c0.43		c0.17	0.35	
v/s Ratio Perm						0.00						0.00
v/c Ratio		0.00		0.40	0.36	0.04	0.63	0.81		0.88	0.49	0.00
Uniform Delay, d1		54.9		46.4	46.1	44.5	55.4	21.8		43.7	6.9	4.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.1		3.4	2.5	0.2	40.9	2.2		20.5	0.2	0.0
Delay (s)		54.9		49.7	48.6	44.7	96.3	24.0		64.2	7.1	4.5
Level of Service		D		D	D	D	F	C		E	A	A
Approach Delay (s)		54.9			47.9			24.4			15.6	
Approach LOS		D			D			C			B	

Intersection Summary

HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Hayden Ct & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	7	29	225	11	241	52	2072	10	93	2293	48
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	1858		1681	1918	1583	1770	5082		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	1858		1681	1918	1583	1770	5082		1770	5085	1583
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)	42	8	32	245	12	262	57	2252	11	101	2492	52
RTOR Reduction (vph)	0	30	0	0	0	222	0	0	0	0	0	7
Lane Group Flow (vph)	42	10	0	127	130	40	57	2263	0	101	2492	45
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)	8.7	8.7		17.0	17.0	17.0	6.0	61.7		8.2	63.9	63.9
Effective Green, g (s)	8.7	8.7		17.0	17.0	17.0	6.0	61.7		8.2	63.9	63.9
Actuated g/C Ratio	0.08	0.08		0.15	0.15	0.15	0.05	0.55		0.07	0.57	0.57
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)	137	144		255	291	240	95	2797		129	2899	902
v/s Ratio Prot	c0.02	0.01		c0.08	0.07		0.03	0.45		c0.06	c0.49	
v/s Ratio Perm						0.03						0.03
v/c Ratio	0.31	0.07		0.50	0.45	0.17	0.60	0.81		0.78	0.86	0.05
Uniform Delay, d1	48.8	48.0		43.6	43.3	41.4	51.9	20.4		51.1	20.3	10.7
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	3.1	0.5		3.7	2.7	0.8	6.6	2.1		24.2	3.1	0.1
Delay (s)	52.0	48.5		47.4	45.9	42.2	58.5	22.5		75.3	23.4	10.7
Level of Service	D	D		D	D	D	E	C		E	C	B
Approach Delay (s)		50.3			44.4			23.4			25.1	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	11.6
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: 19th St & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	16	30	53	34	39	54	1698	54	86	1893	45
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	1.00		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1733			1749		1770	5062		1770	5068	
Flt Permitted		0.78			0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1388			1532		1770	5062		1770	5068	
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)	42	17	33	58	37	42	59	1846	59	93	2058	49
RTOR Reduction (vph)	0	28	0	0	24	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	64	0	0	113	0	59	1902	0	93	2105	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		9.8			9.8		3.8	40.5		6.3	43.0	
Effective Green, g (s)		9.8			9.8		3.8	40.5		6.3	43.0	
Actuated g/C Ratio		0.14			0.14		0.05	0.58		0.09	0.62	
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)		195			215		96	2937		160	3122	
v/s Ratio Prot							0.03	0.38		c0.05	c0.42	
v/s Ratio Perm		0.05			c0.07							
v/c Ratio		0.33			0.53		0.61	0.65		0.58	0.67	
Uniform Delay, d1		27.0			27.8		32.3	9.9		30.5	8.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.1		7.9	0.5		3.4	0.6	
Delay (s)		27.4			28.9		40.2	10.4		33.9	9.4	
Level of Service		C			C		D	B		C	A	
Approach Delay (s)		27.4			28.9			11.3			10.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	8.3
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: 19th St & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	53	79	96	38	71	71	2423	64	111	2168	65
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			0.95		1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1736			1735		1770	5066		1770	5063	
Flt Permitted		0.74			0.65		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1316			1149		1770	5066		1770	5063	
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)	85	58	86	104	41	77	77	2634	70	121	2357	71
RTOR Reduction (vph)	0	20	0	0	18	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	209	0	0	204	0	77	2702	0	121	2426	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		21.7			21.7		6.7	65.0		9.6	67.9	
Effective Green, g (s)		21.7			21.7		6.7	65.0		9.6	67.9	
Actuated g/C Ratio		0.20			0.20		0.06	0.59		0.09	0.62	
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)		261			228		108	3007		155	3140	
v/s Ratio Prot							0.04	c0.53		c0.07	c0.48	
v/s Ratio Perm		0.16			c0.18							
v/c Ratio		0.80			0.90		0.71	0.90		0.78	0.77	
Uniform Delay, d1		41.8			42.8		50.5	19.4		48.9	15.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.2			32.3		16.8	4.1		20.5	1.3	
Delay (s)		57.0			75.1		67.3	23.5		69.4	16.5	
Level of Service		E			E		E	C		E	B	
Approach Delay (s)		57.0			75.1			24.7			19.0	
Approach LOS		E			E			C			B	

Intersection Summary

HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	18.1
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
69: 18th St & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	13	14	66	15	42	35	1730	55	94	1855	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			0.95		1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1752			1730		1770	5062		1770	5070	
Flt Permitted		0.84			0.80		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1511			1427		1770	5062		1770	5070	
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)	24	14	15	72	16	46	38	1880	60	102	2016	41
RTOR Reduction (vph)	0	13	0	0	28	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	40	0	0	106	0	38	1938	0	102	2056	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.1			10.1		2.4	42.7		6.7	47.0	
Effective Green, g (s)		10.1			10.1		2.4	42.7		6.7	47.0	
Actuated g/C Ratio		0.14			0.14		0.03	0.59		0.09	0.65	
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)		210			198		58	2973		163	3278	
v/s Ratio Prot							0.02	0.38		c0.06	c0.41	
v/s Ratio Perm		0.03			c0.07							
v/c Ratio		0.19			0.54		0.66	0.65		0.63	0.63	
Uniform Delay, d1		27.7			29.1		34.7	10.0		31.8	7.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.7		18.4	0.5		5.3	0.5	
Delay (s)		27.8			30.8		53.2	10.6		37.1	8.1	
Level of Service		C			C		D	B		D	A	
Approach Delay (s)		27.8			30.8			11.4			9.5	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	8.3
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
69: 18th St & Union Ave

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	28	32	53	9	30	51	2452	31	51	2290	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			1731		1770	5076		1770	5073	
Flt Permitted		0.77			0.74		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1392			1310		1770	5076		1770	5073	
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)	97	30	35	58	10	33	55	2665	34	55	2489	42
RTOR Reduction (vph)	0	11	0	0	19	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	151	0	0	82	0	55	2698	0	55	2530	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.9			13.9		4.9	60.2		4.9	60.2	
Effective Green, g (s)		13.9			13.9		4.9	60.2		4.9	60.2	
Actuated g/C Ratio		0.15			0.15		0.05	0.65		0.05	0.65	
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)		210			197		94	3314		94	3312	
v/s Ratio Prot							c0.03	c0.53		0.03	0.50	
v/s Ratio Perm		c0.11			0.06							
v/c Ratio		0.72			0.42		0.59	0.81		0.59	0.76	
Uniform Delay, d1		37.3			35.5		42.7	11.9		42.7	11.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.4			0.7		5.9	1.7		5.9	1.2	
Delay (s)		46.7			36.2		48.5	13.5		48.5	12.3	
Level of Service		D			D		D	B		D	B	
Approach Delay (s)		46.7			36.2			14.2			13.0	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	13.2
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
70: Truxtun St & Sonora St

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	361	48	45	912	18	0	0	19	0	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	70	392	52	49	991	20	0	0	21	0	0	39
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	1011			445			1190	1666	222	1455	1683	505
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1011			445			1190	1666	222	1455	1683	505
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 %	90			96			100	100	97	100	100	92
cM capacity (veh/h)	681			1112			118	82	781	79	80	512

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	70	262	183	49	661	350	21	39
Volume Left	70	0	0	49	0	0	0	0
Volume Right	0	0	52	0	0	20	21	39
cSH	681	1700	1700	1112	1700	1700	781	512
Volume to Capacity	0.10	0.15	0.11	0.04	0.39	0.21	0.03	0.08
Queue Length 95th (ft)	8	0	0	3	0	0	2	6
Control Delay (s)	10.9	0.0	0.0	8.4	0.0	0.0	9.7	12.6
Lane LOS	B			A			A	B
Approach Delay (s)	1.5			0.4			9.7	12.6
Approach LOS							A	B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
70: Truxtun St & Sonora St

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	112	897	162	58	742	11	0	0	94	0	0	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	122	975	176	63	807	12	0	0	102	0	0	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)												
pX, platoon unblocked												
vC, conflicting volume	818			1151			1862	2251	576	1772	2333	409
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818			1151			1862	2251	576	1772	2333	409
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 %	85			90			100	100	78	100	100	96
cM capacity (veh/h)	806			603			35	31	461	33	28	591

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	122	650	501	63	538	281	102	26
Volume Left	122	0	0	63	0	0	0	0
Volume Right	0	0	176	0	0	12	102	26
cSH	806	1700	1700	603	1700	1700	461	591
Volume to Capacity	0.15	0.38	0.29	0.10	0.32	0.17	0.22	0.04
Queue Length 95th (ft)	13	0	0	9	0	0	21	3
Control Delay (s)	10.3	0.0	0.0	11.7	0.0	0.0	15.0	11.4
Lane LOS	B			B			C	B
Approach Delay (s)	1.0			0.8			15.0	11.4
Approach LOS							C	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
71: Truxtun St & Tulare St

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	418	35	51	1173	9	16	1	6	10	9	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	82	454	38	55	1275	10	17	1	7	11	10	50
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1007							
pX, platoon unblocked	0.75						0.75	0.75		0.75	0.75	0.75
vC, conflicting volume	1285			492			1440	2032	170	1712	2046	642
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	727			492			932	1717	170	1293	1736	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 %	88			95			85	98	99	86	82	94
cM capacity (veh/h)	658			1067			118	56	844	77	54	818

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	82	182	182	129	55	850	435	25	71
Volume Left	82	0	0	0	55	0	0	17	11
Volume Right	0	0	0	38	0	0	10	7	50
cSH	658	1700	1700	1700	1067	1700	1700	143	185
Volume to Capacity	0.12	0.11	0.11	0.08	0.05	0.50	0.26	0.17	0.38
Queue Length 95th (ft)	11	0	0	0	4	0	0	15	42
Control Delay (s)	11.2	0.0	0.0	0.0	8.6	0.0	0.0	35.4	36.1
Lane LOS	B				A			E	E
Approach Delay (s)	1.6				0.4			35.4	36.1
Approach LOS								E	E

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
71: Truxtun St & Tulare St

6/18/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	876	8	55	490	25	28	7	140	26	6	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	15	952	9	60	533	27	30	8	152	28	7	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)					994							
pX, platoon unblocked												
vC, conflicting volume	560			961			1383	1666	322	1170	1657	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			961			1383	1666	322	1170	1657	280
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			92			66	91	77	71	93	99
cM capacity (veh/h)	1007			712			89	86	674	99	87	717

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	15	381	381	199	60	355	205	190	41
Volume Left	15	0	0	0	60	0	0	30	28
Volume Right	0	0	0	9	0	0	27	152	7
cSH	1007	1700	1700	1700	712	1700	1700	290	112
Volume to Capacity	0.02	0.22	0.22	0.12	0.08	0.21	0.12	0.66	0.37
Queue Length 95th (ft)	1	0	0	0	7	0	0	106	37
Control Delay (s)	8.6	0.0	0.0	0.0	10.5	0.0	0.0	38.2	54.8
Lane LOS	A				B			E	F
Approach Delay (s)	0.1				1.0			38.2	54.8
Approach LOS								E	F

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
72: Truxtun St & Baker St

6/18/2012

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	4	97	277	27	89	1061	56	8	29	3	170	21
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	0.99		1.00	1.00	0.85			1.00	0.98	
Flt Protected		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)		1770	5018		1770	3539	1583			1770	1832	
Flt Permitted		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (perm)		1770	5018		1770	3539	1583			1770	1832	
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)	4	105	301	29	97	1153	61	9	32	3	185	23
RTOR Reduction (vph)	0	0	10	0	0	0	5	0	0	0	6	0
Lane Group Flow (vph)	0	109	320	0	97	1153	65	0	0	35	202	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)		6.1	29.4		5.9	29.2	29.2			2.1	13.3	
Effective Green, g (s)		6.1	29.4		5.9	29.2	29.2			2.1	13.3	
Actuated g/C Ratio		0.09	0.44		0.09	0.43	0.43			0.03	0.20	
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)		160	2189		155	1533	686			55	362	
v/s Ratio Prot		c0.06	0.06		0.05	c0.33				c0.02	c0.11	
v/s Ratio Perm							0.04					
v/c Ratio		0.68	0.15		0.63	0.75	0.09			0.64	0.56	
Uniform Delay, d1		29.7	11.4		29.7	16.1	11.3			32.3	24.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2		9.1	0.0		5.6	1.9	0.0			16.3	1.1	
Delay (s)		38.8	11.5		35.2	17.9	11.3			48.6	25.4	
Level of Service		D	B		D	B	B			D	C	
Approach Delay (s)			18.3			18.9					28.8	
Approach LOS			B			B					C	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.9
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Volume (vph)	10	184	128	8
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	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	200	139	9
RTOR Reduction (vph)	0	0	3	0
Lane Group Flow (vph)	11	200	145	0
Turn Type	Prot		Perm	
Protected Phases	7	4		
Permitted Phases			4	
Actuated Green, G (s)	0.7	12.5	12.5	
Effective Green, g (s)	0.7	12.5	12.5	
Actuated g/C Ratio	0.01	0.19	0.19	
Clearance Time (s)	4.6	4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	
Lane Grp Cap (vph)	18	346	294	
v/s Ratio Prot	0.01	0.11		
v/s Ratio Perm			0.09	
v/c Ratio	0.61	0.58	0.49	
Uniform Delay, d1	33.2	25.0	24.6	
Progression Factor	1.00	1.00	1.00	
Incremental Delay, d2	36.2	1.5	0.5	
Delay (s)	69.4	26.5	25.1	
Level of Service	E	C	C	
Approach Delay (s)		27.2		
Approach LOS		C		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
72: Truxtun St & Baker St

6/18/2012

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	12	213	914	32	142	521	54	4	25	11	295	100
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	0.99		1.00	1.00	0.85			1.00	0.96	
Flt Protected		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)		1770	5059		1770	3539	1583			1770	1792	
Flt Permitted		0.95	1.00		0.95	1.00	1.00			0.95	1.00	
Satd. Flow (perm)		1770	5059		1770	3539	1583			1770	1792	
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)	13	232	993	35	154	566	59	4	27	12	321	109
RTOR Reduction (vph)	0	0	4	0	0	0	3	0	0	0	17	0
Lane Group Flow (vph)	0	245	1024	0	154	566	60	0	0	39	413	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)		8.3	20.2		7.2	19.1	19.1			3.2	21.3	
Effective Green, g (s)		8.3	20.2		7.2	19.1	19.1			3.2	21.3	
Actuated g/C Ratio		0.12	0.30		0.11	0.28	0.28			0.05	0.31	
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)		215	1498		187	991	443			83	560	
v/s Ratio Prot		c0.14	c0.20		0.09	0.16				c0.02	c0.23	
v/s Ratio Perm							0.04					
v/c Ratio		1.14	0.68		0.82	0.57	0.14			0.47	0.74	
Uniform Delay, d1		30.0	21.2		29.9	21.0	18.4			31.7	20.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2		104.1	1.0		23.4	0.5	0.1			1.5	4.3	
Delay (s)		134.0	22.2		53.3	21.5	18.4			33.2	25.3	
Level of Service		F	C		D	C	B			C	C	
Approach Delay (s)			43.7			27.5					26.0	
Approach LOS			D			C					C	

Intersection Summary

HCM Average Control Delay	35.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Volume (vph)	34	377	114	2
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	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	410	124	2
RTOR Reduction (vph)	0	0	1	0
Lane Group Flow (vph)	37	410	125	0
Turn Type	Prot		Perm	
Protected Phases	7	4		
Permitted Phases			4	
Actuated Green, G (s)	1.4	20.1	20.1	
Effective Green, g (s)	1.4	20.1	20.1	
Actuated g/C Ratio	0.02	0.29	0.29	
Clearance Time (s)	4.6	4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	
Lane Grp Cap (vph)	36	549	467	
v/s Ratio Prot	0.02	0.22		
v/s Ratio Perm			0.08	
v/c Ratio	1.03	0.75	0.27	
Uniform Delay, d1	33.4	21.7	18.4	
Progression Factor	1.00	1.00	1.00	
Incremental Delay, d2	158.4	4.8	0.1	
Delay (s)	191.8	26.6	18.5	
Level of Service	F	C	B	
Approach Delay (s)		35.5		
Approach LOS		D		

Intersection Summary

FRESNO HEAVY MAINTENANCE
NO-BUILD 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	121	13	66	226	46	31	160	29	33	182	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	0.92
Hourly flow rate (vph)	0	132	14	72	246	50	34	174	32	36	198	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	146	367	239	234
Volume Left (vph)	0	72	34	36
Volume Right (vph)	14	50	32	0
Hadj (s)	-0.02	-0.01	-0.02	0.06
Departure Headway (s)	6.0	5.6	5.9	5.9
Degree Utilization, x	0.24	0.57	0.39	0.39
Capacity (veh/h)	525	606	555	550
Control Delay (s)	10.9	15.8	12.5	12.6
Approach Delay (s)	10.9	15.8	12.5	12.6
Approach LOS	B	C	B	B

Intersection Summary			
Delay	13.5		
HCM Level of Service	B		
Intersection Capacity Utilization	51.2%	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)	92	234	56	106	368	93	25	222	39	36	268	95
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	0.92
Hourly flow rate (vph)	100	254	61	115	400	101	27	241	42	39	291	103

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	415	616	311	434
Volume Left (vph)	100	115	27	39
Volume Right (vph)	61	101	42	103
Hadj (s)	-0.01	-0.03	-0.03	-0.09
Departure Headway (s)	9.1	9.1	9.5	9.0
Degree Utilization, x	1.05	1.56	0.82	1.09
Capacity (veh/h)	401	400	373	394
Control Delay (s)	89.9	285.2	44.3	100.7
Approach Delay (s)	89.9	285.2	44.3	100.7
Approach LOS	F	F	E	F

Intersection Summary			
Delay	152.3		
HCM Level of Service	F		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
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						
Volume (veh/h)	0	430	376	0	432	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	467	409	0	470	168
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	409				876	409
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409				876	409
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	74
cM capacity (veh/h)	1150				319	643

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	467	409	638
Volume Left	0	0	470
Volume Right	0	0	168
cSH	1700	1700	368
Volume to Capacity	0.27	0.24	1.73
Queue Length 95th (ft)	0	0	994
Control Delay (s)	0.0	0.0	366.2
Lane LOS			F
Approach Delay (s)	0.0	0.0	366.2
Approach LOS			F

Intersection Summary			
Average Delay	154.3		
Intersection Capacity Utilization	62.7%	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						
Volume (veh/h)	0	498	435	0	317	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	541	473	0	345	168
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	473				1014	473
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473				1014	473
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	72
cM capacity (veh/h)	1089				264	591

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	541	473	513
Volume Left	0	0	345
Volume Right	0	0	168
cSH	1700	1700	323
Volume to Capacity	0.32	0.28	1.59
Queue Length 95th (ft)	0	0	754
Control Delay (s)	0.0	0.0	308.2
Lane LOS			F
Approach Delay (s)	0.0	0.0	308.2
Approach LOS			F

Intersection Summary			
Average Delay	103.5		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: E Central Ave & SR 99 NB onramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	60	722	372	309	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	785	404	336	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	404				1488	572
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404				1488	572
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				100	100
cM capacity (veh/h)	1154				129	519

Direction, Lane #	EB 1	WB 1
Volume Total	850	740
Volume Left	65	0
Volume Right	0	336
cSH	1154	1700
Volume to Capacity	0.06	0.44
Queue Length 95th (ft)	4	0
Control Delay (s)	1.4	0.0
Lane LOS	A	
Approach Delay (s)	1.4	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: E Central Ave & SR 99 NB onramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	157	620	376	618	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	171	674	409	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	409				1760	745
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409				1760	745
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				100	100
cM capacity (veh/h)	1150				79	414

Direction, Lane #	EB 1	WB 1
Volume Total	845	1080
Volume Left	171	0
Volume Right	0	672
cSH	1150	1700
Volume to Capacity	0.15	0.64
Queue Length 95th (ft)	13	0
Control Delay (s)	3.5	0.0
Lane LOS	A	
Approach Delay (s)	3.5	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
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)	330	0	0	755	156	628
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	359	0	0	821	170	683
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			359		1179	359
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			359		1179	359
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		19	0
cM capacity (veh/h)			1200		210	686

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	359	821	852
Volume Left	0	0	170
Volume Right	0	0	683
cSH	1700	1700	473
Volume to Capacity	0.21	0.48	1.80
Queue Length 95th (ft)	0	0	1334
Control Delay (s)	0.0	0.0	389.6
Lane LOS			F
Approach Delay (s)	0.0	0.0	389.6
Approach LOS			F

Intersection Summary			
Average Delay	163.4		
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
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)	516	0	0	924	32	497
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	561	0	0	1004	35	540
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			561		1565	561
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			561		1565	561
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		72	0
cM capacity (veh/h)			1010		123	527

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	561	1004	575
Volume Left	0	0	35
Volume Right	0	0	540
cSH	1700	1700	439
Volume to Capacity	0.33	0.59	1.31
Queue Length 95th (ft)	0	0	636
Control Delay (s)	0.0	0.0	180.8
Lane LOS			F
Approach Delay (s)	0.0	0.0	180.8
Approach LOS			F

Intersection Summary			
Average Delay	48.6		
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: SR 99 SB on ramp & S.Chestnut Ave

4/25/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	345	27	361	340
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	375	29	392	370
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	1544	390			404	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1544	390			404	
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			66	
cM capacity (veh/h)	83	659			1154	

Direction, Lane #	NB 1	SB 1
Volume Total	404	762
Volume Left	0	392
Volume Right	29	0
cSH	1700	1154
Volume to Capacity	0.24	0.34
Queue Length 95th (ft)	0	38
Control Delay (s)	0.0	7.1
Lane LOS		A
Approach Delay (s)	0.0	7.1
Approach LOS		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: SR 99 SB on ramp & S. Chestnut Ave

4/25/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	492	65	577	299
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	535	71	627	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	2149	570			605	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2149	570			605	
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			36	
cM capacity (veh/h)	19	521			973	

Direction, Lane #	NB 1	SB 1
Volume Total	605	952
Volume Left	0	627
Volume Right	71	0
cSH	1700	973
Volume to Capacity	0.36	0.64
Queue Length 95th (ft)	0	122
Control Delay (s)	0.0	14.1
Lane LOS		B
Approach Delay (s)	0.0	14.1
Approach LOS		

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: E American Avenue & SR 99 SB off ramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	280	442	0	108	144
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	304	480	0	117	157
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	480				785	480
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480				785	480
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				68	73
cM capacity (veh/h)	1082				362	586

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	304	480	117	157
Volume Left	0	0	117	0
Volume Right	0	0	0	157
cSH	1700	1700	362	586
Volume to Capacity	0.18	0.28	0.32	0.27
Queue Length 95th (ft)	0	0	35	27
Control Delay (s)	0.0	0.0	19.7	13.4
Lane LOS			C	B
Approach Delay (s)	0.0	0.0	16.1	
Approach LOS			C	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: E American Avenue & SR 99 SB off ramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	496	537	0	325	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	539	584	0	353	45
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	584				1123	584
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	584				1123	584
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	91
cM capacity (veh/h)	991				228	512

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	539	584	353	45
Volume Left	0	0	353	0
Volume Right	0	0	0	45
cSH	1700	1700	228	512
Volume to Capacity	0.32	0.34	1.55	0.09
Queue Length 95th (ft)	0	0	545	7
Control Delay (s)	0.0	0.0	307.9	12.7
Lane LOS			F	B
Approach Delay (s)	0.0	0.0	274.8	
Approach LOS			F	

Intersection Summary			
Average Delay	71.9		
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E American Ave & SR 99 NB on ramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	43	346	443	140	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	376	482	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	482				1027	558
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	482				1027	558
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	100
cM capacity (veh/h)	1081				248	529

Direction, Lane #	EB 1	WB 1
Volume Total	423	634
Volume Left	47	0
Volume Right	0	152
cSH	1081	1700
Volume to Capacity	0.04	0.37
Queue Length 95th (ft)	3	0
Control Delay (s)	1.4	0.0
Lane LOS	A	
Approach Delay (s)	1.4	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: E American Ave & SR 99 NB on ramp

4/25/2011

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (veh/h)	111	797	533	105	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	121	866	579	114	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	579				1744	636
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	579				1744	636
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)	994				84	478

Direction, Lane #	EB 1	WB 1
Volume Total	987	693
Volume Left	121	0
Volume Right	0	114
cSH	994	1700
Volume to Capacity	0.12	0.41
Queue Length 95th (ft)	10	0
Control Delay (s)	3.1	0.0
Lane LOS	A	
Approach Delay (s)	3.1	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
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	100	4	13	148	22	7	62	10	8	53	23
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	0.92
Hourly flow rate (vph)	17	109	4	14	161	24	8	67	11	9	58	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	130	199	86	91
Volume Left (vph)	17	14	8	9
Volume Right (vph)	4	24	11	25
Hadj (s)	0.04	-0.02	-0.02	-0.11
Departure Headway (s)	4.6	4.5	4.8	4.7
Degree Utilization, x	0.17	0.25	0.11	0.12
Capacity (veh/h)	743	764	699	708
Control Delay (s)	8.5	8.9	8.4	8.3
Approach Delay (s)	8.5	8.9	8.4	8.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.6		
HCM Level of Service	A		
Intersection Capacity Utilization	24.3%	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)	29	324	18	9	229	7	10	67	22	12	71	86
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	0.92
Hourly flow rate (vph)	32	352	20	10	249	8	11	73	24	13	77	93

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	403	266	108	184
Volume Left (vph)	32	10	11	13
Volume Right (vph)	20	8	24	93
Hadj (s)	0.02	0.02	-0.08	-0.26
Departure Headway (s)	5.2	5.4	6.0	5.6
Degree Utilization, x	0.58	0.40	0.18	0.29
Capacity (veh/h)	659	622	513	565
Control Delay (s)	15.3	12.0	10.3	10.9
Approach Delay (s)	15.3	12.0	10.3	10.9
Approach LOS	C	B	B	B

Intersection Summary			
Delay	13.0		
HCM Level of Service	B		
Intersection Capacity Utilization	48.5%	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	43	36	0	23	6
Sign Control	Free			Stop	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	47	39	0	25	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		12	0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		12	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		96	100	97	99
cM capacity (veh/h)	1623		977	896	896	1085

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	47	39	32
Volume Left	0	39	0
Volume Right	47	0	7
cSH	1700	977	929
Volume to Capacity	0.03	0.04	0.03
Queue Length 95th (ft)	0	3	3
Control Delay (s)	0.0	8.8	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	8.8	9.0
Approach LOS		A	A

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	13.3%	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	137	79	0	178	20
Sign Control	Free			Stop	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	149	86	0	193	22
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		97	0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		97	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	78	98
cM capacity (veh/h)	1623		724	896	896	1085

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	149	86	215
Volume Left	0	86	0
Volume Right	149	0	22
cSH	1700	724	912
Volume to Capacity	0.09	0.12	0.24
Queue Length 95th (ft)	0	10	23
Control Delay (s)	0.0	10.6	10.2
Lane LOS		B	B
Approach Delay (s)	0.0	10.6	10.2
Approach LOS		B	B

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
10: SR 99 NB off ramp &

4/25/2011

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Volume (veh/h)	0	0	79	75	0	0	889	18	22	774
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	86	82	0	0	966	20	24	841
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	1201	1229	986			82			1239	41
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	1201	1229	986			82			1239	41
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	88			100			84	18
cM capacity (veh/h)	20	155	696			1514			153	1021

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1	NW 2
Volume Total	86	41	41	644	342	24	841
Volume Left	86	0	0	0	0	0	0
Volume Right	0	0	0	0	20	0	841
cSH	696	1700	1700	1700	1700	153	1021
Volume to Capacity	0.12	0.02	0.02	0.38	0.20	0.16	0.82
Queue Length 95th (ft)	10	0	0	0	0	13	244
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	32.9	22.5
Lane LOS	B					D	C
Approach Delay (s)	5.6			0.0		22.8	
Approach LOS						C	

Intersection Summary			
Average Delay	10.2		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
10: SR 99 NB off ramp &

4/25/2011

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Volume (veh/h)	0	0	44	246	0	0	821	12	40	590
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	48	267	0	0	892	13	43	641
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	1150	1262	905			267			1268	134
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	1150	1262	905			267			1268	134
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	94			100			72	28
cM capacity (veh/h)	32	158	747			1293			156	891

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	NW 1	NW 2
Volume Total	48	134	134	595	311	43	641
Volume Left	48	0	0	0	0	0	0
Volume Right	0	0	0	0	13	0	641
cSH	747	1700	1700	1700	1700	156	891
Volume to Capacity	0.06	0.08	0.08	0.35	0.18	0.28	0.72
Queue Length 95th (ft)	5	0	0	0	0	27	160
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	36.6	18.7
Lane LOS	B					E	C
Approach Delay (s)	1.5			0.0		19.8	
Approach LOS						C	

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	50.0%	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	7	136	45	809	79	29	19	20	24
Sign Control	Stop			Free			Free			Stop	
Grade	0%			0%			0%			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)	0	0	8	148	49	879	86	32	21	22	26
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	2000	2064	117			148			1949	2023	59
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	2000	2064	117			148			1949	2023	59
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			39			0	1	97
cM capacity (veh/h)	1	21	1469			1431			20	22	995

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SE 1
Volume Total	8	99	98	879	57	60	68
Volume Left	8	0	0	879	0	0	21
Volume Right	0	0	49	0	0	32	26
cSH	1469	1700	1700	1431	1700	1700	33
Volume to Capacity	0.01	0.06	0.06	0.61	0.03	0.04	2.06
Queue Length 95th (ft)	0	0	0	112	0	0	193
Control Delay (s)	7.5	0.0	0.0	11.4	0.0	0.0	747.4
Lane LOS	A			B			F
Approach Delay (s)	0.3			10.1			747.4
Approach LOS							F

Intersection Summary				
Average Delay	48.3			
Intersection Capacity Utilization	63.4%	ICU Level of Service		B
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	38	219	34	611	197	41	41	50	224
Sign Control	Stop			Free			Free			Stop	
Grade	0%			0%			0%			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)	0	0	41	238	37	664	214	45	45	54	243
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	1802	1926	259			238			1766	1885	129
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1802	1926	259			238			1766	1885	129
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 %	0	100	97			50			0	0	73
cM capacity (veh/h)	0	32	1303			1326			31	34	896

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SE 1
Volume Total	41	159	116	664	143	116	342
Volume Left	41	0	0	664	0	0	45
Volume Right	0	0	37	0	0	45	243
cSH	1303	1700	1700	1326	1700	1700	105
Volume to Capacity	0.03	0.09	0.07	0.50	0.08	0.07	3.26
Queue Length 95th (ft)	2	0	0	73	0	0	Err
Control Delay (s)	7.9	0.0	0.0	10.4	0.0	0.0	Err
Lane LOS	A			B			F
Approach Delay (s)	1.0			7.5			Err
Approach LOS							F

Intersection Summary			
Average Delay	2169.3		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

HANFORD HEAVY MAINTENANCE
NO-BUILD 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	38	92	11	52	66	41	254	9	62	684	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		0.93			0.93		1.00	0.99		1.00	1.00	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1708			1727		1770	1853		1770	1854	
Flt Permitted		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1708			1727		1770	1853		1770	1854	
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)	49	41	100	12	57	72	45	276	10	67	743	25
RTOR Reduction (vph)	0	46	0	0	46	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	144	0	0	95	0	45	285	0	67	767	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		11.1			7.9		4.0	35.3		4.5	35.8	
Effective Green, g (s)		11.1			7.9		4.0	35.3		4.5	35.8	
Actuated g/C Ratio		0.15			0.11		0.05	0.47		0.06	0.48	
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)		253			182		95	874		106	887	
v/s Ratio Prot		c0.08			c0.06		0.03	0.15		c0.04	c0.41	
v/s Ratio Perm												
v/c Ratio		0.57			0.52		0.47	0.33		0.63	0.86	
Uniform Delay, d1		29.6			31.7		34.4	12.3		34.3	17.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.9			2.7		3.7	0.2		11.7	8.8	
Delay (s)		32.6			34.4		38.1	12.5		46.0	26.1	
Level of Service		C			C		D	B		D	C	
Approach Delay (s)		32.6			34.4			16.0			27.7	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
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)	25	42	169	8	66	89	141	765	29	83	373	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		0.90			0.93		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1674			1721		1770	1852		1770	1845	
Flt Permitted		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1674			1721		1770	1852		1770	1845	
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)	27	46	184	9	72	97	153	832	32	90	405	28
RTOR Reduction (vph)	0	105	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	152	0	0	128	0	153	863	0	90	431	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		11.4			10.8		10.2	34.9		6.0	30.7	
Effective Green, g (s)		11.4			10.8		10.2	34.9		6.0	30.7	
Actuated g/C Ratio		0.14			0.14		0.13	0.44		0.08	0.39	
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)		241			235		228	817		134	716	
v/s Ratio Prot		c0.09			c0.07		c0.09	c0.47		0.05	0.23	
v/s Ratio Perm												
v/c Ratio		0.63			0.54		0.67	1.06		0.67	0.60	
Uniform Delay, d1		31.9			31.9		32.9	22.1		35.6	19.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			2.6		7.5	47.4		12.5	1.4	
Delay (s)		36.9			34.4		40.4	69.5		48.1	20.7	
Level of Service		D			C		D	E		D	C	
Approach Delay (s)		36.9			34.4			65.1			25.4	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	48.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
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)	7	105	0	9	127	1	11	6	1	2	93	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	8	114	0	10	138	1	12	7	1	2	101	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	207	137	101	193	136	7	101			8		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	207	137	101	193	136	7	101			8		
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	85	100	99	82	100	99			100		
cM capacity (veh/h)	639	747	954	671	747	1075	1491			1613		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	122	149	20	103
Volume Left	8	10	12	2
Volume Right	0	1	1	0
cSH	739	744	1491	1613
Volume to Capacity	0.16	0.20	0.01	0.00
Queue Length 95th (ft)	15	19	1	0
Control Delay (s)	10.8	11.1	4.6	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	10.8	11.1	4.6	0.2
Approach LOS	B	B		

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	23.6%	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)	4	142	72	33	161	1	10	345	4	54	0	35
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	4	154	78	36	175	1	11	375	4	59	0	38
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	624	538	19	691	554	377	38			379		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624	538	19	691	554	377	38			379		
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	64	93	84	58	100	99			95		
cM capacity (veh/h)	256	425	1059	229	415	669	1572			1179		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	237	212	390	97
Volume Left	4	36	11	59
Volume Right	78	1	4	38
cSH	522	366	1572	1179
Volume to Capacity	0.45	0.58	0.01	0.05
Queue Length 95th (ft)	59	87	1	4
Control Delay (s)	17.5	27.6	0.3	5.1
Lane LOS	C	D	A	A
Approach Delay (s)	17.5	27.6	0.3	5.1
Approach LOS	C	D		

Intersection Summary			
Average Delay	11.3		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
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	10	5	2	14	11	6	298	2	9	779	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	3	11	5	2	15	12	7	324	2	10	847	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	1228	1210	851	1220	1213	325	855			326		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1228	1210	851	1220	1213	325	855			326		
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	94	98	99	91	98	99			99		
cM capacity (veh/h)	141	180	360	146	179	716	785			1234		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	20	29	333	865
Volume Left	3	2	7	10
Volume Right	5	12	2	9
cSH	198	251	785	1234
Volume to Capacity	0.10	0.12	0.01	0.01
Queue Length 95th (ft)	8	10	1	1
Control Delay (s)	25.2	21.2	0.3	0.2
Lane LOS	D	C	A	A
Approach Delay (s)	25.2	21.2	0.3	0.2
Approach LOS	D	C		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
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	12	5	4	8	14	7	929	1	7	546	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	5	13	5	4	9	15	8	1010	1	8	593	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	1655	1636	595	1648	1638	1010	597			1011		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1655	1636	595	1648	1638	1010	597			1011		
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 %	92	87	99	94	91	95	99			99		
cM capacity (veh/h)	68	99	504	69	99	291	980			686		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	24	28	1018	604
Volume Left	5	4	8	8
Volume Right	5	15	1	3
cSH	107	139	980	686
Volume to Capacity	0.22	0.20	0.01	0.01
Queue Length 95th (ft)	20	18	1	1
Control Delay (s)	47.9	37.4	0.2	0.3
Lane LOS	E	E	A	A
Approach Delay (s)	47.9	37.4	0.2	0.3
Approach LOS	E	E		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
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	0	26	3	0	22	0	0	105	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	22	1	0	28	3	0	24	0	0	114	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	32			23			110	54	22	64	53	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			23			110	54	22	64	53	30
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	97	100	100	86	100
cM capacity (veh/h)	1581			1592			776	837	1055	910	839	1045

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	32	24	115
Volume Left	0	0	0	0
Volume Right	1	3	0	1
cSH	1581	1592	837	840
Volume to Capacity	0.00	0.00	0.03	0.14
Queue Length 95th (ft)	0	0	2	12
Control Delay (s)	0.0	0.0	9.4	10.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.4	10.0
Approach LOS			A	A

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	15.6%	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	18	6	1	23	3	6	362	0	3	98	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	20	7	1	25	3	7	393	0	3	107	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	28			26			106	53	23	248	55	27
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	28			26			106	53	23	248	55	27
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			99	53	100	99	87	100
cM capacity (veh/h)	1585			1588			787	837	1054	445	836	1049

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	26	29	400	111
Volume Left	0	1	7	3
Volume Right	7	3	0	1
cSH	1585	1588	837	816
Volume to Capacity	0.00	0.00	0.48	0.14
Queue Length 95th (ft)	0	0	66	12
Control Delay (s)	0.0	0.3	13.2	10.1
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.3	13.2	10.1
Approach LOS			B	B

Intersection Summary			
Average Delay	11.3		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

WASCO HEAVY MAINTENANCE
NO-BUILD 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)	271	369	73	18	354	14	127	231	58	19	125	180
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	295	401	79	20	385	15	138	251	63	21	136	196
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	400			480			1717	1469	441	1610	1501	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	400			480			1717	1469	441	1610	1501	392
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 %	75			98			0	0	90	0	0	70
cM capacity (veh/h)	1159			1082			0	93	616	0	89	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	295	480	20	400	452	352
Volume Left	295	0	20	0	138	21
Volume Right	0	79	0	15	63	196
cSH	1159	1700	1082	1700	0	0
Volume to Capacity	0.25	0.28	0.02	0.24	Err	Err
Queue Length 95th (ft)	25	0	1	0	Err	Err
Control Delay (s)	9.2	0.0	8.4	0.0	Err	Err
Lane LOS	A		A		F	F
Approach Delay (s)	3.5		0.4		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
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)	299	401	131	60	480	9	102	198	42	13	241	296
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	325	436	142	65	522	10	111	215	46	14	262	322
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	532			578			2262	1819	507	1896	1885	527
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532			578			2262	1819	507	1896	1885	527
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 %	69			93			0	0	92	0	0	42
cM capacity (veh/h)	1036			995			0	50	566	0	45	551

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	325	578	65	532	372	598
Volume Left	325	0	65	0	111	14
Volume Right	0	142	0	10	46	322
cSH	1036	1700	995	1700	0	0
Volume to Capacity	0.31	0.34	0.07	0.31	Err	Err
Queue Length 95th (ft)	34	0	5	0	Err	Err
Control Delay (s)	10.1	0.0	8.9	0.0	Err	Err
Lane LOS	B		A		F	F
Approach Delay (s)	3.6		1.0		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
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)	52	0	5	0	1	0	7	365	3	0	139	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	57	0	5	0	1	0	8	397	3	0	151	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)												
pX, platoon unblocked												
vC, conflicting volume	585	588	172	591	607	398	193			400		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	588	172	591	607	398	193			400		
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 %	87	100	99	100	100	100	99			100		
cM capacity (veh/h)	420	419	871	414	409	651	1380			1159		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	62	1	8	400	193
Volume Left	57	0	8	0	0
Volume Right	5	0	0	3	42
cSH	440	409	1380	1700	1159
Volume to Capacity	0.14	0.00	0.01	0.24	0.00
Queue Length 95th (ft)	12	0	0	0	0
Control Delay (s)	14.5	13.8	7.6	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	14.5	13.8	0.1		0.0
Approach LOS	B	B			

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	35.9%	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)	60	0	6	0	0	0	9	283	0	0	356	69
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	65	0	7	0	0	0	10	308	0	0	387	75
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	752	752	424	758	789	308	462			308		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	752	424	758	789	308	462			308		
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 %	80	100	99	100	100	100	99			100		
cM capacity (veh/h)	325	336	630	318	320	732	1099			1253		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	72	0	10	308	462
Volume Left	65	0	10	0	0
Volume Right	7	0	0	0	75
cSH	339	1700	1099	1700	1253
Volume to Capacity	0.21	0.00	0.01	0.18	0.00
Queue Length 95th (ft)	20	0	1	0	0
Control Delay (s)	18.4	0.0	8.3	0.0	0.0
Lane LOS	C	A	A		
Approach Delay (s)	18.4	0.0	0.3		0.0
Approach LOS	C	A			

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			

SHAFTER HEAVY MAINTENANCE
NO-BUILD 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	22	5	5	0	1	46	816	2	85	998	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	1	24	5	5	0	1	50	887	2	92	1085	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	2259	2258	888	2275	2259	1085	1085			889		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2259	2258	888	2275	2259	1085	1085			889		
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	28	98	47	100	100	92			88		
cM capacity (veh/h)	25	33	343	10	33	263	643			762		

Direction, Lane #	EB 1	WB 1	SE 1	NW 1
Volume Total	30	7	939	1177
Volume Left	1	5	50	92
Volume Right	5	1	2	0
cSH	39	12	643	762
Volume to Capacity	0.78	0.54	0.08	0.12
Queue Length 95th (ft)	72	31	6	10
Control Delay (s)	232.8	484.7	2.3	4.0
Lane LOS	F	F	A	A
Approach Delay (s)	232.8	484.7	2.3	4.0
Approach LOS	F	F		

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
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	3	23	0	5	52	12	1175	1	24	969	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	1	3	25	0	5	57	13	1277	1	26	1053	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)												
pX, platoon unblocked												
vC, conflicting volume	2490	2452	1278	2457	2431	1074	1096			1278		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2490	2452	1278	2457	2431	1074	1096			1278		
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 %	91	89	88	100	82	79	98			95		
cM capacity (veh/h)	13	29	203	16	30	267	637			543		

Direction, Lane #	EB 1	WB 1	SE 1	NW 1
Volume Total	29	62	1291	1122
Volume Left	1	0	13	26
Volume Right	25	57	1	42
cSH	91	157	637	543
Volume to Capacity	0.32	0.39	0.02	0.05
Queue Length 95th (ft)	31	43	2	4
Control Delay (s)	62.1	42.1	1.0	1.9
Lane LOS	F	E	A	A
Approach Delay (s)	62.1	42.1	1.0	1.9
Approach LOS	F	E		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
2: Galpin & Santa Fe Way

4/25/2011

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	197	12	546	216	45	1022
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	13	593	235	49	1111
RTOR Reduction (vph)	0	11	0	102	0	0
Lane Group Flow (vph)	214	2	593	133	49	1111
Turn Type		Prot		Perm	Prot	
Protected Phases	3	3	6		5	2
Permitted Phases				6		
Actuated Green, G (s)	9.6	9.6	34.2	34.2	4.5	42.7
Effective Green, g (s)	9.6	9.6	34.2	34.2	4.5	42.7
Actuated g/C Ratio	0.16	0.16	0.57	0.57	0.07	0.71
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)	282	252	1057	898	132	1319
v/s Ratio Prot	c0.12	0.00	0.32		0.03	c0.60
v/s Ratio Perm				0.08		
v/c Ratio	0.76	0.01	0.56	0.15	0.37	0.84
Uniform Delay, d1	24.2	21.3	8.3	6.2	26.6	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	0.0	0.7	0.1	1.8	5.1
Delay (s)	35.4	21.4	9.0	6.2	28.3	11.4
Level of Service	D	C	A	A	C	B
Approach Delay (s)	34.6		8.2			12.1
Approach LOS	C		A			B

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Galpin & Santa Fe Way

4/25/2011

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	244	21	1026	58	9	774
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	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	265	23	1115	63	10	841
RTOR Reduction (vph)	0	19	0	10	0	0
Lane Group Flow (vph)	265	4	1115	53	10	841
Turn Type		Prot		Perm	Prot	
Protected Phases	3	3	6		5	2
Permitted Phases				6		
Actuated Green, G (s)	14.9	14.9	55.6	55.6	1.3	60.9
Effective Green, g (s)	14.9	14.9	55.6	55.6	1.3	60.9
Actuated g/C Ratio	0.18	0.18	0.66	0.66	0.02	0.73
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)	315	281	1236	1050	27	1354
v/s Ratio Prot	c0.15	0.00	c0.60		0.01	c0.45
v/s Ratio Perm				0.03		
v/c Ratio	0.84	0.01	0.90	0.05	0.37	0.62
Uniform Delay, d1	33.3	28.4	11.8	4.9	40.8	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.0	0.0	9.3	0.0	8.4	0.9
Delay (s)	51.3	28.4	21.1	4.9	49.2	6.6
Level of Service	D	C	C	A	D	A
Approach Delay (s)	49.5		20.3			7.1
Approach LOS	D		C			A

Intersection Summary

HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	83.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

CORCORAN NO-BUILD 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	28	6	4	24	0	5	0	23	0	60	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	30	7	4	26	0	5	0	25	0	65	27
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	103	115	46	65	103	0	92			25		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	103	115	46	65	103	0	92			25		
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	96	99	100	97	100	100			100		
cM capacity (veh/h)	843	772	1013	885	783	1084	1500			1588		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	37	30	5	25	43	49
Volume Left	0	4	5	0	0	0
Volume Right	7	0	0	25	0	27
cSH	806	796	1500	1700	1700	1700
Volume to Capacity	0.05	0.04	0.00	0.01	0.03	0.03
Queue Length 95th (ft)	4	3	0	0	0	0
Control Delay (s)	9.7	9.7	7.4	0.0	0.0	0.0
Lane LOS	A	A	A			
Approach Delay (s)	9.7	9.7	1.3		0.0	
Approach LOS	A	A				

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	15.5%	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	34	6	3	21	0	16	0	41	0	76	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	0	37	7	3	23	0	17	0	45	0	83	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)											284	
pX, platoon unblocked												
vC, conflicting volume	140	173	52	101	139	0	104			45		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140	173	52	101	139	0	104			45		
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	95	99	100	97	100	99			100		
cM capacity (veh/h)	790	711	1004	822	742	1084	1485			1562		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	26	17	45	55	49
Volume Left	0	3	17	0	0	0
Volume Right	7	0	0	45	0	22
cSH	744	751	1485	1700	1700	1700
Volume to Capacity	0.06	0.03	0.01	0.03	0.03	0.03
Queue Length 95th (ft)	5	3	1	0	0	0
Control Delay (s)	10.1	10.0	7.5	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.1	10.0	2.1		0.0	
Approach LOS	B	A				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	17.9%	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)	20	107	10	5	72	8	6	14	8	9	21	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	22	116	11	5	78	9	7	15	9	10	23	33
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	87			127			303	263	122	275	264	83
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	87			127			303	263	122	275	264	83
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			99	98	99	98	96	97
cM capacity (veh/h)	1509			1459			602	630	929	650	630	977

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	149	92	30	65
Volume Left	22	5	7	10
Volume Right	11	9	9	33
cSH	1509	1459	687	770
Volume to Capacity	0.01	0.00	0.04	0.08
Queue Length 95th (ft)	1	0	3	7
Control Delay (s)	1.2	0.5	10.5	10.1
Lane LOS	A	A	B	B
Approach Delay (s)	1.2	0.5	10.5	10.1
Approach LOS			B	B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	23.9%	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	142	20	12	329	15	11	21	8	5	30	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	45	154	22	13	358	16	12	23	9	5	33	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	374			176			714	654	165	666	657	366
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374			176			714	654	165	666	657	366
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	99	98	91	92
cM capacity (veh/h)	1185			1400			288	368	879	339	367	679

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	221	387	43	89
Volume Left	45	13	12	5
Volume Right	22	16	9	51
cSH	1185	1400	383	495
Volume to Capacity	0.04	0.01	0.11	0.18
Queue Length 95th (ft)	3	1	10	16
Control Delay (s)	1.9	0.3	15.6	13.9
Lane LOS	A	A	C	B
Approach Delay (s)	1.9	0.3	15.6	13.9
Approach LOS			C	B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Whitley Ave & Pickerell Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	70	9	12	44	2	4	11	13	3	240	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	18	76	10	13	48	2	4	12	14	3	261	29
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	50			86			328	194	43	170	198	25
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50			86			328	194	43	170	198	25
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			99	98	99	100	62	97
cM capacity (veh/h)	1555			1508			405	686	1018	745	683	1045

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	57	48	37	26	30	293
Volume Left	18	0	13	0	4	3
Volume Right	0	10	0	2	14	29
cSH	1555	1700	1508	1700	724	708
Volume to Capacity	0.01	0.03	0.01	0.02	0.04	0.41
Queue Length 95th (ft)	1	0	1	0	3	51
Control Delay (s)	2.5	0.0	2.7	0.0	10.2	13.6
Lane LOS	A		A		B	B
Approach Delay (s)	1.3		1.6		10.2	13.6
Approach LOS					B	B

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Whitley Ave & Pickerell Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	87	6	12	71	5	11	254	26	4	28	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	68	95	7	13	77	5	12	276	28	4	30	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	83			101			343	343	51	457	344	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	83			101			343	343	51	457	344	41
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			99			98	50	97	98	94	97
cM capacity (veh/h)	1513			1489			524	547	1007	275	546	1021

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	116	54	52	44	316	63
Volume Left	68	0	13	0	12	4
Volume Right	0	7	0	5	28	28
cSH	1513	1700	1489	1700	569	635
Volume to Capacity	0.05	0.03	0.01	0.03	0.56	0.10
Queue Length 95th (ft)	4	0	1	0	85	8
Control Delay (s)	4.6	0.0	1.9	0.0	19.0	11.3
Lane LOS	A		A		C	B
Approach Delay (s)	3.1		1.0		19.0	11.3
Approach LOS					C	B

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Sherman Ave & Santa Fe Ave

5/24/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	4	261	0	4	7	21	8	1	5	252	24
Sign Control		Yield			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	26	4	284	0	4	8	23	9	1	5	274	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)												
pX, platoon unblocked												
vC, conflicting volume	362	353	287	639	340	9	274			10		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	362	353	287	639	340	9	274			10		
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	99	62	100	99	99	98			100		
cM capacity (veh/h)	576	560	752	237	570	1072	1289			1610		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	314	12	33	305
Volume Left	26	0	23	5
Volume Right	284	8	1	26
cSH	730	812	1289	1610
Volume to Capacity	0.43	0.01	0.02	0.00
Queue Length 95th (ft)	54	1	1	0
Control Delay (s)	13.6	9.5	5.5	0.2
Lane LOS	B	A	A	A
Approach Delay (s)	13.6	9.5	5.5	0.2
Approach LOS	B	A		

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	2	19	0	5	2	484	291	0	1	33	30
Sign Control		Yield			Stop			Free			Free	
Grade		0%			0%			0%			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	0.92
Hourly flow rate (vph)	21	2	21	0	5	2	526	316	0	1	36	33
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	1428	1423	52	1445	1407	316	36			316		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1428	1423	52	1445	1407	316	36			316		
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	98	98	100	94	100	67			100		
cM capacity (veh/h)	80	90	1015	78	93	724	1575			1244		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	43	8	842	70
Volume Left	21	0	526	1
Volume Right	21	2	0	33
cSH	143	123	1575	1244
Volume to Capacity	0.30	0.06	0.33	0.00
Queue Length 95th (ft)	30	5	37	0
Control Delay (s)	40.7	36.1	6.6	0.1
Lane LOS	E	E	A	A
Approach Delay (s)	40.7	36.1	6.6	0.1
Approach LOS	E	E		

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		