No-Build Synchro Outputs

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
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		

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
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 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 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
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 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
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
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
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
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
13: P St & Ventura Ave

4/9/2012

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
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 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		

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
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
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 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 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 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 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
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
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
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
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
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
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
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
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

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

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

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

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
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
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
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
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
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
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
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
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
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
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
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
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
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

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

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)	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)	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

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	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	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	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	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	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 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 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 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 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 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 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 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
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)	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
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
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
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
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
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
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
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
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
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
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
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
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
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

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
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
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 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
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 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 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
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
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
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
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
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
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
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
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
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
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 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
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 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
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
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 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
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 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
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		

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

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

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)	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	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	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

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

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	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

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)	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)	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)	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

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
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 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

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

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

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

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 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)	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

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

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		

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		

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

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

4/9/2012

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

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 & 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		

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	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)	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	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)	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		

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)	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)	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)	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)	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

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)	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)	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)	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

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)	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	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		

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

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)	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)	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)	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)	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)	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)	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	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)	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)	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

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	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

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

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)	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)	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)	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)	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

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)	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)	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)	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)	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)	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	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)	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)	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

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

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	32	156	0	0	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)	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)	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	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	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

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

HCM Signalized Intersection Capacity Analysis
54: Van Ness Ave & Stanislaus St

4/9/2012

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)	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)	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	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)	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)	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)	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)	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)	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	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		

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	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)	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)	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	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)	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	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)	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	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)	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	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)	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)	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)	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)	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)	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	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)	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)	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)	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)	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)	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)	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 & 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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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 &

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)	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)	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: 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)	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	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	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)	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	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)	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

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

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)	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	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)	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	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)	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	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

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

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)	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)	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)	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	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)	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)	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)	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)	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

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		

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)	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)	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

No-Build Plus Project Overpass Synchro Outputs

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
2: Van Ness Ave & San Benito St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	268	0	0	196	47	480	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	291	0	0	213	51	522	122	98	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	118	194	142	122	583	159
Volume Left (vph)	21	0	0	0	522	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	0.23	0.38	0.28	0.23	1.09	0.26
Capacity (veh/h)	492	501	493	513	529	602
Control Delay (s)	11.1	13.1	11.7	10.7	88.1	9.6
Approach Delay (s)	12.4		11.3		71.3	
Approach LOS	B		B		F	

Intersection Summary			
Delay	45.3		
HCM Level of Service	E		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

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)		1131				
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
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	272	335	102	469	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	296	364	111	510	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				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	510			660			1200	1209	478	1209	1391	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510			606			1181	1191	412	1191	1384	255
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	16
cM capacity (veh/h)	1052			910			0	154	553	122	117	744

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	660	281	340	884	417
Volume Left	0	111	0	185	0
Volume Right	364	0	0	208	417
cSH	1700	910	1700	148	744
Volume to Capacity	0.39	0.12	0.20	5.98	0.56
Queue Length 95th (ft)	0	10	0	Err	88
Control Delay (s)	0.0	4.5	0.0	Err	15.8
Lane LOS		A		F	C
Approach Delay (s)	0.0	2.1		6801.9	
Approach LOS				F	

Intersection Summary				
Average Delay	3428.7			
Intersection Capacity Utilization	105.6%	ICU Level of Service		G
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	316	0	317	0	0	0	0	997	223	226	555	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		322	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	1084	242	246	603	0
RTOR Reduction (vph)	0	282	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	343	63	0	0	0	0	0	1310	0	246	603	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	21.8	21.8						88.8		88.8	88.8	
Effective Green, g (s)	21.8	21.8						88.8		88.8	88.8	
Actuated g/C Ratio	0.18	0.18						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)	322	288						2547		238	2619	
v/s Ratio Prot	c0.19	0.04						0.38			0.17	
v/s Ratio Perm										c0.76		
v/c Ratio	1.07	0.22						0.51		1.03	0.23	
Uniform Delay, d1	49.1	41.8						6.5		15.6	4.9	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	68.5	0.9						0.1		67.4	0.0	
Delay (s)	117.6	42.7						6.6		83.0	4.9	
Level of Service	F	D						A		F	A	
Approach Delay (s)		80.0			0.0			6.6			27.5	
Approach LOS		F			A			A			C	

Intersection Summary

HCM Average Control Delay	30.5	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	85.6%	ICU Level of Service	E
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	931	0	0	676	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	1012	0	0	735	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	2672	2702	484	2218	2818	506	967			1012		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2672	2702	484	2218	2818	506	967			1012		
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	9	41			100		
cM capacity (veh/h)	0	9	529	13	7	512	708			681		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	138	476	420	506	506	490	478
Volume Left	125	0	420	0	0	0	0
Volume Right	0	463	0	0	0	0	233
cSH	12	175	708	1700	1700	1700	1700
Volume to Capacity	11.67	2.73	0.59	0.30	0.30	0.29	0.28
Queue Length 95th (ft)	Err	1048	98	0	0	0	0
Control Delay (s)	Err	833.3	17.2	0.0	0.0	0.0	0.0
Lane LOS	F	F	C				
Approach Delay (s)	2893.6		5.0			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	592.2		
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
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	1156	3	1	814	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	1257	3	1	885	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	1969	2576	459	2159	2591	630	917			1260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1932	2561	368	2129	2576	630	843			1260		
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	76	93	0	0	97	73			100		
cM capacity (veh/h)	0	18	607	16	18	424	761			548		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	68	88	835	632	443	475
Volume Left	23	53	207	0	1	0
Volume Right	41	14	0	3	0	33
cSH	0	20	761	1700	548	1700
Volume to Capacity	Err	4.43	0.27	0.37	0.00	0.28
Queue Length 95th (ft)	Err	Err	27	0	0	0
Control Delay (s)	Err	Err	6.6	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	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	221	501	53	326	553	104	150	725	441	82	461	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)	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	0.94		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	3488		1770	1819		1770	3339		1770	3321	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3488		1770	1819		1770	3339		1770	3321	
Peak-hour factor, PHF	0.92	0.92	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	58	354	601	113	163	788	479	89	501	350
RTOR Reduction (vph)	0	6	0	0	5	0	0	63	0	0	87	0
Lane Group Flow (vph)	240	597	0	354	709	0	163	1204	0	89	764	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		45.4	45.4		8.0	48.4		8.0	48.4	
Effective Green, g (s)	23.8	23.8		45.4	45.4		8.0	48.4		8.0	48.4	
Actuated g/C Ratio	0.16	0.16		0.31	0.31		0.06	0.33		0.06	0.33	
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)	291	573		554	570		98	1115		98	1109	
v/s Ratio Prot	0.14	c0.17		0.20	c0.39		c0.09	c0.36		0.05	0.23	
v/s Ratio Perm												
v/c Ratio	0.82	1.04		0.64	1.24		1.66	1.08		0.91	0.69	
Uniform Delay, d1	58.6	60.6		42.8	49.8		68.5	48.3		68.1	41.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.3	49.0		1.8	124.1		339.0	51.1		60.5	1.4	
Delay (s)	74.9	109.6		44.5	173.9		407.5	99.4		128.6	43.2	
Level of Service	E	F		D	F		F	F		F	D	
Approach Delay (s)		99.7			131.0			134.6			51.3	
Approach LOS		F			F			F			D	

Intersection Summary

HCM Average Control Delay	108.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
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)	35	216	56	254	522	194	61	720	159	189	543	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	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	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3430		1770	3395		1770	3443		1770	3449	
Flt Permitted	0.20	1.00		0.57	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	369	3430		1059	3395		1770	3443		1770	3449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	235	61	276	567	211	66	783	173	205	590	121
RTOR Reduction (vph)	0	36	0	0	60	0	0	28	0	0	24	0
Lane Group Flow (vph)	38	260	0	276	718	0	66	928	0	205	687	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	20.2	20.2		20.2	20.2		5.0	24.0		8.8	27.8	
Effective Green, g (s)	20.2	20.2		20.2	20.2		5.0	24.0		8.8	27.8	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.08	0.37		0.13	0.43	
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)	114	1059		327	1049		135	1263		238	1466	
v/s Ratio Prot		0.08			0.21		0.04	c0.27		c0.12	0.20	
v/s Ratio Perm	0.10			c0.26								
v/c Ratio	0.33	0.25		0.84	0.68		0.49	0.73		0.86	0.47	
Uniform Delay, d1	17.4	16.9		21.1	19.8		29.0	17.9		27.7	13.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	0.2		19.2	2.3		1.0	2.7		25.1	0.5	
Delay (s)	20.8	17.1		40.3	22.1		30.0	20.6		52.8	14.0	
Level of Service	C	B		D	C		C	C		D	B	
Approach Delay (s)		17.5			26.9			21.2			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
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)	39	440	151	0	0	0	0	836	98	24	773	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)		5065	1583					3483		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.20	1.00	
Satd. Flow (perm)		5065	1583					3483		365	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)	42	478	164	0	0	0	0	909	107	26	840	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	520	96	0	0	0	0	1001	0	26	840	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		173	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					0.61		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	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	79	43	37	156	324	17	85	727	5	25	701	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	170	352	18	92	790	5	27	762	40
RTOR Reduction (vph)	0	0	35	0	0	13	0	0	3	0	0	28
Lane Group Flow (vph)	86	47	5	170	352	5	92	790	2	27	762	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	5.8	24.9	24.9	2.8	21.9	21.9
Effective Green, g (s)	8.5	8.5	8.5	18.6	18.6	18.6	5.8	24.9	24.9	2.8	21.9	21.9
Actuated g/C Ratio	0.12	0.12	0.12	0.26	0.26	0.26	0.08	0.35	0.35	0.04	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)	211	222	188	894	485	412	144	1234	552	69	1085	486
v/s Ratio Prot	c0.05	0.03		0.05	c0.19		c0.05	c0.22		0.02	0.22	
v/s Ratio Perm			0.00			0.00			0.00			0.01
v/c Ratio	0.41	0.21	0.03	0.19	0.73	0.01	0.64	0.64	0.00	0.39	0.70	0.03
Uniform Delay, d1	29.1	28.4	27.8	20.5	24.1	19.6	31.8	19.5	15.2	33.5	21.9	17.3
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	2.6	1.0	0.1	0.2	6.4	0.0	6.7	1.5	0.0	1.3	2.6	0.0
Delay (s)	31.7	29.4	27.9	20.7	30.5	19.6	38.5	21.0	15.2	34.8	24.4	17.3
Level of Service	C	C	C	C	C	B	D	C	B	C	C	B
Approach Delay (s)		30.2			27.1			22.8			24.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (vph)	35	104	112	0	0	162	658	0	0	745	411
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			0.34	1.00			1.00	1.00
Satd. Flow (perm)		3433	1583			637	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)	38	113	122	0	0	176	715	0	0	810	447
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	151	19	0	0	176	715	0	0	810	276
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			23.2	23.2			23.2	23.2
Effective Green, g (s)		6.0	6.0			23.2	23.2			23.2	23.2
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)		548	253			393	2184			2184	977
v/s Ratio Prot		c0.04					0.20			0.23	
v/s Ratio Perm			0.01			c0.28					0.17
v/c Ratio		0.28	0.08			0.45	0.33			0.37	0.28
Uniform Delay, d1		13.9	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)		14.0	13.5			4.1	3.5			3.6	3.4
Level of Service		B	B			A	A			A	A
Approach Delay (s)		13.8		0.0			3.6			3.5	
Approach LOS		B		A			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)	37.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	54.4%	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)	124	600	7	12	1088	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	652	8	13	1183	166	15	154	5	199	139	284
RTOR Reduction (vph)	0	1	0	0	0	65	0	4	0	0	0	203
Lane Group Flow (vph)	135	659	0	13	1183	101	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	0.60		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	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		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	632	102	0	0	218	161	0	27	0	7	63	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	1.00
Satd. Flow (prot)	1770	3539			3539	1583		2049			2038	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.98	1.00
Satd. Flow (perm)	1770	3539			3539	1583		2049			2005	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)	687	111	0	0	237	175	0	29	0	8	68	249
RTOR Reduction (vph)	0	0	0	0	0	143	0	0	0	0	0	197
Lane Group Flow (vph)	687	111	0	0	237	32	0	29	0	0	76	52
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4		3	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	29.2	45.8			12.6	12.6		14.2			14.4	14.2
Effective Green, g (s)	29.2	45.8			12.6	12.6		14.2			14.4	14.2
Actuated g/C Ratio	0.43	0.67			0.18	0.18		0.21			0.21	0.21
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	756	2370			652	292		425			422	329
v/s Ratio Prot	c0.39	0.03			c0.07			0.01				
v/s Ratio Perm						0.02					c0.04	0.03
v/c Ratio	0.91	0.05			0.36	0.11		0.07			0.18	0.16
Uniform Delay, d1	18.4	3.9			24.4	23.2		21.8			22.2	22.2
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	14.7	0.0			0.7	0.3		0.0			0.2	0.1
Delay (s)	33.0	3.9			25.1	23.6		21.8			22.4	22.3
Level of Service	C	A			C	C		C			C	C
Approach Delay (s)		29.0			24.4			21.8			22.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	222	78	205	455	54	111	205	105	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	0.96		1.00	0.98		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	3401		1770	3483		1770	1768		1770	1828	
Flt Permitted	0.42	1.00		0.55	1.00		0.67	1.00		0.46	1.00	
Satd. Flow (perm)	775	3401		1033	3483		1246	1768		863	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	85	223	495	59	121	223	114	14	121	17
RTOR Reduction (vph)	0	46	0	0	16	0	0	30	0	0	9	0
Lane Group Flow (vph)	5	280	0	223	538	0	121	307	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	1568		476	1606		486	690		337	713	
v/s Ratio Prot		0.08			0.15			c0.17			0.07	
v/s Ratio Perm	0.01			c0.22			0.10			0.02		
v/c Ratio	0.01	0.18		0.47	0.34		0.25	0.45		0.04	0.18	
Uniform Delay, d1	8.2	8.9		10.4	9.7		11.6	12.7		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		0.3	0.0		0.1	0.2		0.0	0.0	
Delay (s)	8.3	8.9		10.7	9.7		11.7	12.9		10.7	11.3	
Level of Service	A	A		B	A		B	B		B	B	
Approach Delay (s)		8.9			10.0			12.6			11.3	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	461	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	501	82	0	0	0	0	66	77	64	221	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	590	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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	127	449	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	488	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	507			0			538	783	0	778	773	253
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507			0			538	783	0	778	773	253
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)	1054			1622			374	296	1084	261	300	746

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	382	262	15	10	28
Volume Left	138	0	15	0	0
Volume Right	0	18	0	0	8
cSH	1622	1700	374	296	358
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	17.6	15.9
Lane LOS	A		C	C	C
Approach Delay (s)	1.9		16.0		15.9
Approach LOS			C		C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	98	9	112	57	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.88	
Flt Protected	1.00			0.97	1.00	
Satd. Flow (prot)	3494			3426	1624	
Flt Permitted	1.00			0.95	1.00	
Satd. Flow (perm)	3494			3380	1624	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	10	122	62	2	25
RTOR Reduction (vph)	9	0	0	0	24	0
Lane Group Flow (vph)	109	0	0	184	3	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	1.8			1.8	0.6	
Effective Green, g (s)	1.8			1.8	0.6	
Actuated g/C Ratio	0.15			0.15	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	524			507	81	
v/s Ratio Prot	0.03					
v/s Ratio Perm				c0.05	c0.00	
v/c Ratio	0.21			0.36	0.04	
Uniform Delay, d1	4.5			4.6	5.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.2	0.1	
Delay (s)	4.5			4.7	5.5	
Level of Service	A			A	A	
Approach Delay (s)	4.5			4.7	5.5	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	12.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	449	202	240	240	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	261	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		0.97	0.96
vC, conflicting volume			708		1250	354
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			609		1114	241
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		76	93
cM capacity (veh/h)			926		140	729

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	325	382	348	174	85
Volume Left	0	0	261	0	34
Volume Right	0	220	0	0	51
cSH	1700	1700	926	1700	273
Volume to Capacity	0.19	0.22	0.28	0.10	0.31
Queue Length 95th (ft)	0	0	29	0	32
Control Delay (s)	0.0	0.0	8.6	0.0	24.0
Lane LOS			A		C
Approach Delay (s)	0.0		5.7		24.0
Approach LOS					C

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	285	58	56	9	245	4	307	486	233	135	61	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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			1.00		1.00	0.95		1.00	0.88	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1764			1856		1770	1772		1770	1647	
Flt Permitted		0.59			0.98		0.53	1.00		0.13	1.00	
Satd. Flow (perm)		1071			1829		991	1772		238	1647	
Peak-hour factor, PHF	0.92	0.92	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	61	10	266	4	334	528	253	147	66	223
RTOR Reduction (vph)	0	9	0	0	1	0	0	24	0	0	120	0
Lane Group Flow (vph)	0	425	0	0	279	0	334	757	0	147	169	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		27.9			27.9		31.3	31.3		31.3	31.3	
Effective Green, g (s)		27.9			27.9		31.3	31.3		31.3	31.3	
Actuated g/C Ratio		0.41			0.41		0.46	0.46		0.46	0.46	
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)		442			755		459	820		110	763	
v/s Ratio Prot								0.43			0.10	
v/s Ratio Perm		c0.40			0.15		0.34			c0.62		
v/c Ratio		0.96			0.37		0.73	0.92		1.34	0.22	
Uniform Delay, d1		19.3			13.8		14.7	17.0		18.1	10.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		32.8			0.1		4.8	15.6		200.5	0.1	
Delay (s)		52.1			13.9		19.5	32.7		218.6	10.9	
Level of Service		D			B		B	C		F	B	
Approach Delay (s)		52.1			13.9			28.7			80.9	
Approach LOS		D			B			C			F	

Intersection Summary

HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	116.0%	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)	154	360	64	89	385	60	118	529	160	90	137	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		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	1820		1770	3468		1770	3416		1770	3224	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1820		1770	3468		1770	3416		1770	3224	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	391	70	97	418	65	128	575	174	98	149	218
RTOR Reduction (vph)	0	8	0	0	16	0	0	38	0	0	154	0
Lane Group Flow (vph)	167	453	0	97	467	0	128	711	0	98	213	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	8.7	21.0		6.1	18.4		5.9	20.7		5.7	20.5	
Effective Green, g (s)	8.7	21.0		6.1	18.4		5.9	20.7		5.7	20.5	
Actuated g/C Ratio	0.12	0.30		0.09	0.26		0.08	0.30		0.08	0.29	
Clearance Time (s)	4.0	4.2		4.0	4.2		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	5.0		2.0	5.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	220	547		154	913		149	1012		144	946	
v/s Ratio Prot	c0.09	c0.25		0.05	0.13		c0.07	c0.21		0.06	0.07	
v/s Ratio Perm												
v/c Ratio	0.76	0.83		0.63	0.51		0.86	0.70		0.68	0.23	
Uniform Delay, d1	29.6	22.8		30.8	21.9		31.6	21.9		31.2	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.5	11.1		5.7	1.0		34.7	2.8		10.1	0.3	
Delay (s)	42.1	33.9		36.5	22.9		66.3	24.7		41.3	18.9	
Level of Service	D	C		D	C		E	C		D	B	
Approach Delay (s)		36.0			25.2			30.7			23.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	12.2
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	167	374	180	0	0	0	0	514	156	176	627	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5008	1583					3415		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.33	1.00	
Satd. Flow (perm)		5008	1583					3415		618	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	559	170	191	682	0
RTOR Reduction (vph)	0	0	128	0	0	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	589	68	0	0	0	0	678	0	191	682	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					1680		304	1741	
v/s Ratio Prot		c0.12						0.20			0.19	
v/s Ratio Perm			0.04							c0.31		
v/c Ratio		0.34	0.12					0.40		0.63	0.39	
Uniform Delay, d1		13.4	12.4					8.9		10.3	8.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		2.9	0.1	
Delay (s)		13.4	12.4					8.9		13.2	8.9	
Level of Service		B	B					A		B	A	
Approach Delay (s)		13.2			0.0			8.9			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	119	306	43	128	352	0	0	1032	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.19	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	357	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	129	333	47	139	383	0	0	1122	112
RTOR Reduction (vph)	0	0	0	0	0	23	0	0	0	0	0	43
Lane Group Flow (vph)	0	0	0	129	333	24	139	383	0	0	1122	69
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				15.7	15.7	15.7	30.8	30.8			30.8	30.8
Effective Green, g (s)				15.7	15.7	15.7	30.8	30.8			30.8	30.8
Actuated g/C Ratio				0.29	0.29	0.29	0.56	0.56			0.56	0.56
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)				506	533	453	200	1985			1985	888
v/s Ratio Prot				0.07	c0.18			0.11			0.32	
v/s Ratio Perm						0.02	c0.39					0.04
v/c Ratio				0.25	0.62	0.05	0.69	0.19			0.57	0.08
Uniform Delay, d1				15.1	17.0	14.2	8.7	5.9			7.7	5.5
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.3	2.3	0.0	12.6	0.1			0.6	0.1
Delay (s)				15.4	19.3	14.3	21.2	6.0			8.4	5.6
Level of Service				B	B	B	C	A			A	A
Approach Delay (s)		0.0			17.9			10.1			8.1	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	37	156	44	118	210	81	47	298	26	90	1054	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3497		1770	3490	
Flt Permitted	0.58	1.00	1.00	0.65	1.00	1.00	0.13	1.00		0.54	1.00	
Satd. Flow (perm)	1083	1863	1583	1210	1863	1583	247	3497		1008	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)	40	170	48	128	228	88	51	324	28	98	1146	116
RTOR Reduction (vph)	0	0	32	0	0	59	0	11	0	0	13	0
Lane Group Flow (vph)	40	170	16	128	228	29	51	341	0	98	1249	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	30.3	30.3		30.3	30.3	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.3	30.3		30.3	30.3	
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)	354	609	518	396	609	518	129	1824		526	1820	
v/s Ratio Prot		0.09			c0.12			0.10			c0.36	
v/s Ratio Perm	0.04		0.01	0.11		0.02	0.21			0.10		
v/c Ratio	0.11	0.28	0.03	0.32	0.37	0.06	0.40	0.19		0.19	0.69	
Uniform Delay, d1	13.7	14.5	13.3	14.7	15.0	13.4	8.4	7.4		7.4	10.4	
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	0.1	0.0	0.2	0.1	0.0	0.7	0.0		0.1	0.9	
Delay (s)	13.7	14.6	13.3	14.9	15.1	13.4	9.1	7.4		7.4	11.2	
Level of Service	B	B	B	B	B	B	A	A		A	B	
Approach Delay (s)		14.2			14.7			7.6			11.0	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	39	205	38	0	0	0	21	307	74	307	1217	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.97		1.00	0.98	
Flt Protected		0.99	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1848	1583				1770	3437		1770	3478	
Flt Permitted		0.99	1.00				0.13	1.00		0.51	1.00	
Satd. Flow (perm)		1848	1583				234	3437		949	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)	42	223	41	0	0	0	23	334	80	334	1323	174
RTOR Reduction (vph)	0	0	17	0	0	0	0	21	0	0	10	0
Lane Group Flow (vph)	0	265	24	0	0	0	23	393	0	334	1487	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				31.9	31.9		31.9	31.9	
Effective Green, g (s)		10.5	10.5				31.9	31.9		31.9	31.9	
Actuated g/C Ratio		0.20	0.20				0.62	0.62		0.62	0.62	
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)		376	322				145	2125		587	2150	
v/s Ratio Prot		c0.14						0.11			c0.43	
v/s Ratio Perm			0.02				0.10			0.35		
v/c Ratio		0.70	0.08				0.16	0.18		0.57	0.69	
Uniform Delay, d1		19.1	16.6				4.2	4.2		5.8	6.6	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.9	0.0				0.7	0.1		1.6	1.1	
Delay (s)		24.0	16.7				4.9	4.3		7.4	7.6	
Level of Service		C	B				A	A		A	A	
Approach Delay (s)		23.0			0.0			4.3			7.6	
Approach LOS		C			A			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)	51.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	903	0	337	623	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	982	0	366	677	0
RTOR Reduction (vph)	0	541	0	0	0	0
Lane Group Flow (vph)	0	441	0	366	677	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		15.4		10.7	14.9	
Effective Green, g (s)		15.4		10.7	14.9	
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)		1251		1104	1537	
v/s Ratio Prot				c0.10	c0.19	
v/s Ratio Perm		0.16				
v/c Ratio		0.35		0.33	0.44	
Uniform Delay, d1		6.2		9.1	6.8	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.3	
Delay (s)		6.2		9.2	7.1	
Level of Service		A		A	A	
Approach Delay (s)	6.2			9.2	7.1	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	34.3	Sum of lost time (s)	8.7
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	603	9	0	530	0	0	0	0	434	920	819
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3531			3539					1610	3383	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3531			3539					1610	3383	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	655	10	0	576	0	0	0	0	472	1000	890
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	664	0	0	576	0	0	0	0	425	1047	866
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		14.9			14.9					35.9	35.9	35.9
Effective Green, g (s)		14.9			14.9					35.9	35.9	35.9
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)		895			897					983	2065	966
v/s Ratio Prot		c0.19			0.16							
v/s Ratio Perm										0.26	0.31	c0.55
v/c Ratio		0.74			0.64					0.43	0.51	0.90
Uniform Delay, d1		20.2			19.6					6.1	6.5	9.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		3.3			1.6					0.3	0.2	10.8
Delay (s)		23.5			21.2					6.4	6.7	20.7
Level of Service		C			C					A	A	C
Approach Delay (s)		23.5			21.2			0.0			11.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	133	248	0	413	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)	145	270	0	449	230	514
RTOR Reduction (vph)	0	174	0	0	0	254
Lane Group Flow (vph)	145	96	0	449	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	29.7	29.7
Effective Green, g (s)	20.8	20.8		20.8	29.7	29.7
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)	1254	561		1254	896	801
v/s Ratio Prot	0.04			c0.13	0.13	
v/s Ratio Perm		0.06				c0.16
v/c Ratio	0.12	0.17		0.36	0.26	0.32
Uniform Delay, d1	12.8	13.0		14.0	8.2	8.6
Progression Factor	1.00	1.00		0.61	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.1	0.1	0.1
Delay (s)	12.8	13.2		8.8	8.3	8.7
Level of Service	B	B		A	A	A
Approach Delay (s)	13.0			8.8	8.5	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	58.7	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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	394	533	501	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)	428	579	545	577	0	0
RTOR Reduction (vph)	0	0	0	403	0	0
Lane Group Flow (vph)	428	579	545	174	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	8.3	29.7	17.7	17.7		
Effective Green, g (s)	8.3	29.7	17.7	17.7		
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)	534	1970	1174	525		
v/s Ratio Prot	c0.11	0.15	c0.14			
v/s Ratio Perm				0.10		
v/c Ratio	0.80	0.29	0.46	0.33		
Uniform Delay, d1	24.4	8.4	16.6	15.9		
Progression Factor	1.00	1.00	1.15	2.37		
Incremental Delay, d2	10.9	0.0	0.4	0.5		
Delay (s)	35.3	8.4	19.6	38.2		
Level of Service	D	A	B	D		
Approach Delay (s)		19.9	29.2		0.0	
Approach LOS		B	C		A	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	32.7
Intersection Capacity Utilization	72.0%	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)	347	596	88	93	712	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	3440		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	3440		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	648	96	101	774	178	422	298	29	299	446	305
RTOR Reduction (vph)	0	0	46	0	20	0	0	0	22	0	0	156
Lane Group Flow (vph)	377	648	50	101	932	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	33.3	33.3	5.7	29.7		10.0	21.4	21.4	11.6	22.7	22.7
Effective Green, g (s)	9.0	33.3	33.3	5.7	29.7		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)	346	1321	591	219	1145		385	849	380	446	901	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	0.81		1.10	0.35	0.02	0.67	0.50	0.37
Uniform Delay, d1	40.1	21.4	18.1	40.3	27.2		39.6	28.1	25.9	37.0	28.4	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	74.5	0.6	0.1	0.6	5.2		74.3	0.5	0.0	3.1	1.0	1.3
Delay (s)	114.6	22.0	18.2	40.8	32.4		113.9	28.7	25.9	40.1	29.3	28.7
Level of Service	F	C	B	D	C		F	C	C	D	C	C
Approach Delay (s)		52.9			33.2			76.6			32.2	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	17.5
Intersection Capacity Utilization	72.0%	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)	42	498	122	194	225	270	8	106	9	183	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	0.97			0.94			0.99			0.93	
Flt Protected	0.95	1.00			0.99			1.00			0.98	
Satd. Flow (prot)	1770	4935			3285			1838			1704	
Flt Permitted	0.32	1.00			0.64			0.96			0.84	
Satd. Flow (perm)	592	4935			2140			1777			1464	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	541	133	211	245	293	9	115	10	199	70	278
RTOR Reduction (vph)	0	68	0	0	149	0	0	5	0	0	61	0
Lane Group Flow (vph)	46	606	0	0	600	0	0	129	0	0	486	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)	291	2426			1052			632			521	
v/s Ratio Prot		0.12										
v/s Ratio Perm	0.08				c0.28			0.07			c0.33	
v/c Ratio	0.16	0.25			0.57			0.20			0.93	
Uniform Delay, d1	8.3	8.7			10.6			13.2			18.3	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.0			0.5			0.1			23.5	
Delay (s)	8.4	8.7			11.1			13.3			41.8	
Level of Service	A	A			B			B			D	
Approach Delay (s)		8.7			11.1			13.3			41.8	
Approach LOS		A			B			B			D	

Intersection Summary

HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.4%	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)	128	21	49	40	25	39	83	1210	31	93	910	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		273	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	1315	34	101	989	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	1348	0	101	1117	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	4.1	6.4		48.3	48.3		48.3	48.3	
Effective Green, g (s)	8.1	10.4	10.4	4.1	6.4		48.3	48.3		48.3	48.3	
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)	191	258	219	97	144		246	2265		175	2231	
v/s Ratio Prot	c0.08	c0.01		0.02	c0.02			c0.38			0.32	
v/s Ratio Perm			0.00				0.24			0.37		
v/c Ratio	0.73	0.09	0.03	0.44	0.21		0.37	0.59		0.58	0.50	
Uniform Delay, d1	32.5	28.3	28.0	34.4	32.1		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	11.1	0.1	0.0	1.2	0.3		2.6	0.8		8.9	0.5	
Delay (s)	43.6	28.3	28.1	35.6	32.3		8.9	8.6		16.5	7.6	
Level of Service	D	C	C	D	C		A	A		B	A	
Approach Delay (s)		38.1			33.6			8.6			8.3	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	64.5%	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)	630	485	409	0	0	0	0	863	458	261	639	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					3355		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3355		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)	685	527	445	0	0	0	0	938	498	284	695	0
RTOR Reduction (vph)	0	0	147	0	0	0	0	63	0	0	0	0
Lane Group Flow (vph)	685	527	298	0	0	0	0	1373	0	284	695	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	37.3	37.3	37.3					41.8		15.8	62.8	
Effective Green, g (s)	37.3	37.3	37.3					41.8		15.8	62.8	
Actuated g/C Ratio	0.34	0.34	0.34					0.38		0.14	0.57	
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)	600	632	537					1275		254	2020	
v/s Ratio Prot	c0.39	0.28						c0.41		c0.16	0.20	
v/s Ratio Perm			0.19									
v/c Ratio	1.14	0.83	0.56					1.08		1.12	0.34	
Uniform Delay, d1	36.4	33.5	29.6					34.1		47.1	12.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	82.4	10.8	2.8					48.6		91.9	0.0	
Delay (s)	118.8	44.3	32.4					82.7		139.0	12.6	
Level of Service	F	D	C					F		F	B	
Approach Delay (s)		71.9			0.0			82.7			49.3	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	70.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	120.8%	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	0	0	352	517	443	643	857	0	0	539	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	482	699	932	0	0	586	261
RTOR Reduction (vph)	0	0	0	0	0	103	0	0	0	0	0	72
Lane Group Flow (vph)	0	0	0	0	945	379	699	932	0	0	586	189
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	65.0			20.0	20.0
Effective Green, g (s)					32.0	32.0	41.3	65.0			20.0	20.0
Actuated g/C Ratio					0.30	0.30	0.38	0.60			0.19	0.19
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)					1032	471	679	2138			658	294
v/s Ratio Prot					c0.27		c0.40	0.26			c0.17	
v/s Ratio Perm						0.24						0.12
v/c Ratio					0.92	0.80	1.03	0.44			0.89	0.64
Uniform Delay, d1					36.5	34.9	33.1	11.4			42.7	40.5
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					12.9	10.9	42.3	0.1			13.9	3.6
Delay (s)					49.4	45.8	75.4	11.5			56.7	44.1
Level of Service					D	D	E	B			E	D
Approach Delay (s)		0.0			48.2			38.9			52.8	
Approach LOS		A			D			D			D	

Intersection Summary

HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
40: H St & Fresno

4/11/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	263	351	993	178	250	120	69	902	346	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	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		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	2049	1742	1947	3704		1947	3731		1947	3871	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.38	1.00		0.17	1.00	
Satd. Flow (perm)	1947	2049	1742	1947	3704		776	3731		340	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)	286	382	1079	193	272	130	75	980	376	23	547	22
RTOR Reduction (vph)	0	0	0	0	47	0	0	59	0	0	4	0
Lane Group Flow (vph)	286	382	1079	193	355	0	75	1297	0	23	565	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases			Free				4			8		
Actuated Green, G (s)	11.5	15.7	60.5	8.7	12.9		24.1	24.1		24.1	24.1	
Effective Green, g (s)	11.5	15.7	60.5	8.7	12.9		24.1	24.1		24.1	24.1	
Actuated g/C Ratio	0.19	0.26	1.00	0.14	0.21		0.40	0.40		0.40	0.40	
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)	370	532	1742	280	790		309	1486		135	1542	
v/s Ratio Prot	c0.15	c0.19		0.10	0.10			c0.35			0.15	
v/s Ratio Perm			c0.62				0.10			0.07		
v/c Ratio	0.77	0.72	0.62	0.69	0.45		0.24	0.87		0.17	0.37	
Uniform Delay, d1	23.3	20.4	0.0	24.6	20.7		12.1	16.8		11.7	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	9.7	4.6	1.7	6.9	0.4		0.4	6.0		0.6	0.1	
Delay (s)	32.9	25.0	1.7	31.5	21.1		12.5	22.8		12.3	13.0	
Level of Service	C	C	A	C	C		B	C		B	B	
Approach Delay (s)		11.9			24.5			22.2			12.9	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	57	23	19	14	1	3	173	72	994	82	196	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	0.85			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	1588			3490		1770	1863
Flt Permitted	0.66	1.00			0.73	1.00			0.89		0.19	1.00
Satd. Flow (perm)	1221	1735			1490	1588			3115		353	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	188	78	1080	89	213	555
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	5	0	0	0
Lane Group Flow (vph)	62	46	0	0	16	164	0	0	1242	0	213	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)	6.1	6.1			6.1	6.1			27.2		27.2	27.2
Effective Green, g (s)	6.1	6.1			6.1	6.1			27.2		27.2	27.2
Actuated g/C Ratio	0.14	0.14			0.14	0.14			0.63		0.63	0.63
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)	174	247			212	226			1975		224	1181
v/s Ratio Prot		0.03				c0.10						0.30
v/s Ratio Perm	0.05				0.01				0.40		c0.60	
v/c Ratio	0.36	0.19			0.08	0.73			0.63		0.95	0.47
Uniform Delay, d1	16.6	16.2			16.0	17.6			4.8		7.2	4.1
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1			0.1	9.5			0.5		46.0	0.1
Delay (s)	17.1	16.3			16.0	27.1			5.2		53.2	4.2
Level of Service	B	B			B	C			A		D	A
Approach Delay (s)		16.8				26.2			5.2			16.8
Approach LOS		B				C			A			B

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	9.6
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
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)	19	0
Lane Group Flow (vph)	37	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	27.2	
Effective Green, g (s)	27.2	
Actuated g/C Ratio	0.63	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1104	
v/s Ratio Prot		
v/s Ratio Perm	0.02	
v/c Ratio	0.03	
Uniform Delay, d1	2.9	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	2.9	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	214	156	235	144	265	204	173	611	354	64	459	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	0.91		1.00	0.93		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	3308		1770	3344		1770	3427	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1695		1770	3308		1770	3344		1770	3427	
Peak-hour factor, PHF	0.92	0.92	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	255	157	288	222	188	664	385	70	499	134
RTOR Reduction (vph)	0	67	0	0	168	0	0	93	0	0	28	0
Lane Group Flow (vph)	233	358	0	157	342	0	188	956	0	70	605	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.3	22.1		8.4	19.2		9.0	25.9		6.0	22.9	
Effective Green, g (s)	11.3	22.1		8.4	19.2		9.0	25.9		6.0	22.9	
Actuated g/C Ratio	0.14	0.28		0.11	0.24		0.11	0.33		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)	253	474		188	804		202	1096		134	993	
v/s Ratio Prot	c0.13	c0.21		0.09	0.10		c0.11	c0.29		0.04	0.18	
v/s Ratio Perm												
v/c Ratio	0.92	0.76		0.84	0.43		0.93	0.87		0.52	0.61	
Uniform Delay, d1	33.4	26.0		34.6	25.2		34.7	25.0		35.1	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.9	8.0		26.1	0.8		44.0	8.5		3.6	1.6	
Delay (s)	69.4	34.0		60.7	26.0		78.7	33.5		38.8	25.8	
Level of Service	E	C		E	C		E	C		D	C	
Approach Delay (s)		46.5			34.2			40.3			27.0	
Approach LOS		D			C			D			C	

Intersection Summary

HCM Average Control Delay	37.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	126	893	102	0	0	0	0	420	213	246	593	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					3360		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.35	1.00	
Satd. Flow (perm)		5054	1583					3360		657	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	111	0	0	0	0	457	232	267	645	0
RTOR Reduction (vph)	0	0	74	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	1108	37	0	0	0	0	679	0	267	645	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					1759		344	1853	
v/s Ratio Prot		c0.22						0.20			0.18	
v/s Ratio Perm			0.02							c0.41		
v/c Ratio		0.65	0.07					0.39		0.78	0.35	
Uniform Delay, d1		16.8	13.5					8.5		11.4	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0					0.1		9.6	0.0	
Delay (s)		17.5	13.5					8.5		21.0	8.3	
Level of Service		B	B					A		C	A	
Approach Delay (s)		17.2			0.0			8.5			12.0	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	64	221	90	59	626	0	0	1015	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		291	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	64	680	0	0	1103	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	64	680	0	0	1103	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		135	1643			1643	735
v/s Ratio Prot					c0.10			0.19			c0.31	
v/s Ratio Perm							0.22					0.06
v/c Ratio					0.24		0.47	0.41			0.67	0.14
Uniform Delay, d1					12.0		10.8	10.4			12.2	9.0
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					0.0		1.0	0.1			0.9	0.0
Delay (s)					12.0		11.7	10.5			13.1	9.0
Level of Service					B		B	B			B	A
Approach Delay (s)		0.0			12.0			10.6			12.4	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	158	183	295	99	180	53	300	404	32	68	875	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	5029		1770	3539	1583
Flt Permitted	0.42	1.00	1.00	0.51	1.00		0.26	1.00		0.47	1.00	1.00
Satd. Flow (perm)	778	1863	1583	957	1799		486	5029		877	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	439	35	74	951	243
RTOR Reduction (vph)	0	0	121	0	10	0	0	9	0	0	0	84
Lane Group Flow (vph)	172	199	200	108	244	0	326	465	0	74	951	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		319	3301		576	2323	1039
v/s Ratio Prot		0.11			0.14			0.09			0.27	
v/s Ratio Perm	c0.22		0.13	0.11			c0.67			0.08		0.10
v/c Ratio	0.87	0.42	0.50	0.44	0.53		1.02	0.14		0.13	0.41	0.15
Uniform Delay, d1	35.7	31.1	31.8	31.3	32.2		17.1	6.5		6.4	8.1	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	0.4	0.5	0.6		56.1	0.0		0.0	0.0	0.0
Delay (s)	66.9	31.4	32.2	31.8	32.8		73.3	6.5		6.5	8.1	6.6
Level of Service	E	C	C	C	C		E	A		A	A	A
Approach Delay (s)		40.6			32.5			33.7			7.7	
Approach LOS		D			C			C			A	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	8	117	13	635	202	367	355	547	47	80	150	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	1723	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)	532	1835		1180	1340	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	690	220	399	386	595	51	87	163	313
RTOR Reduction (vph)	0	5	0	0	0	235	0	0	32	0	0	264
Lane Group Flow (vph)	9	136	0	435	475	164	386	595	19	87	163	49
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)	31.0	31.0		31.0	31.0	31.0	19.6	24.5	24.5	6.9	11.8	11.8
Effective Green, g (s)	31.0	31.0		31.0	31.0	31.0	19.6	24.5	24.5	6.9	11.8	11.8
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.26	0.32	0.32	0.09	0.16	0.16
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)	218	752		484	549	649	459	903	513	162	536	247
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		0.90	0.87	0.25	0.84	0.66	0.04	0.54	0.30	0.20
Uniform Delay, d1	13.4	14.2		20.8	20.4	14.7	26.5	22.0	17.5	32.8	28.3	27.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		19.5	13.7	0.2	13.0	2.3	0.1	1.7	0.6	0.8
Delay (s)	13.5	14.3		40.3	34.1	14.9	39.6	24.2	17.5	34.5	28.9	28.5
Level of Service	B	B		D	C	B	D	C	B	C	C	C
Approach Delay (s)		14.3			30.3		29.6				29.6	
Approach LOS		B			C		C				C	

Intersection Summary

HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	8.6
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	15	134	110	1572	331	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	0.68	1.00	0.54	1.00	1.00	1.00
Satd. Flow (perm)	1266	1583	1000	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	146	120	1709	360	30
RTOR Reduction (vph)	0	98	0	0	0	14
Lane Group Flow (vph)	16	48	120	1709	360	16
Turn Type		custom	Perm			Perm
Protected Phases		4		2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	19.0	19.0	30.1	30.1	30.1	30.1
Effective Green, g (s)	19.0	19.0	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.33	0.33	0.52	0.52	0.52	0.52
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)	414	518	518	1833	1833	820
v/s Ratio Prot		c0.03		c0.48	0.10	
v/s Ratio Perm	0.01		0.12			0.01
v/c Ratio	0.04	0.09	0.23	0.93	0.20	0.02
Uniform Delay, d1	13.3	13.6	7.7	13.1	7.5	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0	0.1	9.1	0.0	0.0
Delay (s)	13.3	13.6	7.8	22.2	7.5	6.8
Level of Service	B	B	A	C	A	A
Approach Delay (s)	13.6			21.2	7.5	
Approach LOS	B			C	A	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	177	100	0	0	481	245	606	388	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			0.95				
Flt Protected		0.97			1.00			0.98				
Satd. Flow (prot)		3430			3360			4715				
Flt Permitted		0.62			1.00			0.98				
Satd. Flow (perm)		2182			3360			4715				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	109	0	0	523	266	659	422	625	0	0	0
RTOR Reduction (vph)	0	0	0	0	116	0	0	192	0	0	0	0
Lane Group Flow (vph)	0	301	0	0	673	0	0	1514	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)		765			1178			2192				
v/s Ratio Prot					c0.20			c0.32				
v/s Ratio Perm		0.14										
v/c Ratio		1.18dl			0.57			0.69				
Uniform Delay, d1		13.3			14.3			11.4				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.1			0.4			0.8				
Delay (s)		13.4			14.7			12.2				
Level of Service		B			B			B				
Approach Delay (s)		13.4			14.7			12.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.0%	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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	108	889	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	966	0	0	83	77	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)	117	966	0	0	83	8	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)	42.6	42.6			6.0	6.0						
Effective Green, g (s)	42.6	42.6			6.0	6.0						
Actuated g/C Ratio	0.74	0.74			0.10	0.10						
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)	1314	1383			195	165						
v/s Ratio Prot	0.07	c0.52			c0.04							
v/s Ratio Perm						0.01						
v/c Ratio	0.09	0.70			0.43	0.05						
Uniform Delay, d1	2.0	4.0			24.1	23.1						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.0	1.7			0.5	0.0						
Delay (s)	2.1	5.6			24.6	23.2						
Level of Service	A	A			C	C						
Approach Delay (s)		5.2			23.9			0.0			0.0	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	8.8
Intersection Capacity Utilization	60.0%	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)	486	477	0	0	308	67	42	265	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.96				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1813		1770	1785				
Flt Permitted	0.44	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	819	1863			1813		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)	528	518	0	0	335	73	46	288	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	23	0	0	0	0
Lane Group Flow (vph)	528	518	0	0	395	0	46	376	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	29.6	29.6			29.6		22.0	22.0				
Effective Green, g (s)	29.6	29.6			29.6		22.0	22.0				
Actuated g/C Ratio	0.49	0.49			0.49		0.37	0.37				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	404	919			894		649	655				
v/s Ratio Prot		0.28			0.22		0.03	c0.21				
v/s Ratio Perm	c0.65											
v/c Ratio	1.31	0.56			0.44		0.07	0.57				
Uniform Delay, d1	15.2	10.7			9.8		12.4	15.2				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	155.0	0.5			0.1		0.0	0.8				
Delay (s)	170.2	11.1			10.0		12.4	16.0				
Level of Service	F	B			A		B	B				
Approach Delay (s)		91.4			10.0			15.6			0.0	
Approach LOS		F			A			B			A	

Intersection Summary

HCM Average Control Delay	56.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	263	263	90	262	606	0	0	0	25	1026	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		0.93			0.91					1.00	0.99	
Flt Protected		1.00			1.00					0.95	1.00	
Satd. Flow (prot)		3274			3188					1770	3501	
Flt Permitted		1.00			0.80					0.95	1.00	
Satd. Flow (perm)		3274			2579					1770	3501	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	286	286	98	285	659	0	0	0	27	1115	86
RTOR Reduction (vph)	0	95	0	0	335	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	477	0	0	707	0	0	0	0	27	1193	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		21.6			21.6					5.5	25.7	
Effective Green, g (s)		21.6			21.6					5.5	25.7	
Actuated g/C Ratio		0.37			0.37					0.09	0.44	
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)		1217			959					168	1549	
v/s Ratio Prot		0.15								0.02	c0.34	
v/s Ratio Perm					c0.27							
v/c Ratio		0.39			0.74					0.16	0.77	
Uniform Delay, d1		13.4			15.8					24.2	13.7	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		0.1			2.6					0.5	2.2	
Delay (s)		13.5			18.4					24.6	15.9	
Level of Service		B			B					C	B	
Approach Delay (s)		13.5			18.4			0.0			16.1	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	10.8
Intersection Capacity Utilization	89.5%	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	137	496	10	159	0	52	493	708	115	635	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	536	770	125	690	17
RTOR Reduction (vph)	0	145	0	0	0	0	0	0	388	0	0	3
Lane Group Flow (vph)	0	543	0	11	173	0	57	536	382	125	690	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	32.5	32.5	7.0	36.4	36.4
Effective Green, g (s)		29.5		0.7	34.2		3.1	32.5	32.5	7.0	36.4	36.4
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)		563		14	740		64	703	598	144	788	669
v/s Ratio Prot		c0.33		c0.01	0.09		0.03	0.29		c0.07	c0.37	
v/s Ratio Perm									0.24			0.01
v/c Ratio		0.96		0.79	0.23		0.89	0.76	0.64	0.87	0.88	0.02
Uniform Delay, d1		27.8		42.6	17.2		41.3	23.4	22.0	39.1	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		28.7		130.6	0.1		74.9	4.4	1.6	38.7	10.4	0.0
Delay (s)		56.5		173.2	17.3		116.2	27.8	23.6	77.7	33.2	14.5
Level of Service		E		F	B		F	C	C	E	C	B
Approach Delay (s)		56.5			26.6			29.2			39.5	
Approach LOS		E			C			C			D	

Intersection Summary

HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	16.4
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	303	15	76	272	0	0	0	400	247	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)		1851		1770	1863			1583		1770	1845	
Flt Permitted		1.00		0.37	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1851		692	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	329	16	83	296	0	0	0	435	268	688	47
RTOR Reduction (vph)	0	2	0	0	0	0	0	219	0	0	2	0
Lane Group Flow (vph)	0	343	0	83	296	0	0	216	0	268	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)		613		229	617			412		460	1051	
v/s Ratio Prot		c0.19			0.16			0.14		0.15	c0.40	
v/s Ratio Perm				0.12								
v/c Ratio		0.56		0.36	0.48			0.52		0.58	0.70	
Uniform Delay, d1		23.2		21.5	22.5			26.8		27.3	13.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.6		0.4	0.2			0.6		1.2	1.6	
Delay (s)		23.9		21.9	22.7			27.4		28.5	14.6	
Level of Service		C		C	C			C		C	B	
Approach Delay (s)		23.9			22.5			27.4			18.3	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	294	1099	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	1195	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	1198	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)	35.5	35.5		3.2			6.3		9.2	9.2
Effective Green, g (s)	35.5	35.5		3.2			6.3		9.2	9.2
Actuated g/C Ratio	0.49	0.49		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)	874	1376		72			161		180	238
v/s Ratio Prot	0.18	c0.43		c0.00			c0.04			0.06
v/s Ratio Perm									c0.07	
v/c Ratio	0.37	0.87		0.03			0.47		0.58	0.47
Uniform Delay, d1	11.2	16.2		32.9			31.2		29.5	29.1
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	6.5		0.1			0.8		5.6	2.0
Delay (s)	11.6	22.6		32.9			32.0		35.1	31.0
Level of Service	B	C		C			C		D	C
Approach Delay (s)	20.3			32.9			32.0	0.0		33.0
Approach LOS	C			C			C	A		C

Intersection Summary

HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	17.7
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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	488	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	530	24	0
Approach Volume (veh/h)		577			235				879		0
Crossing Volume (veh/h)		323			1002				554		554
High Capacity (veh/h)		1075			621				894		894
High v/c (veh/h)		0.54			0.38				0.98		0.00
Low Capacity (veh/h)		881			482				719		719
Low v/c (veh/h)		0.66			0.49				1.22		0.00

Intersection Summary			
Maximum v/c High	0.98		
Maximum v/c Low	1.22		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B

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	1354	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	1472	187
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	499	0	0	357	0	0	0	0	114	1472	135
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	c0.42	
v/s Ratio Perm												0.09
v/c Ratio		0.34			0.24					0.15	0.95	0.19
Uniform Delay, d1		13.0			12.4					10.9	17.5	11.1
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.3			0.2					0.2	12.5	0.3
Delay (s)		13.3			12.5					11.1	29.9	11.4
Level of Service		B			B					B	C	B
Approach Delay (s)		13.3			12.5			0.0			26.8	
Approach LOS		B			B			A			C	

Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	6	1594	354	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	1733	385	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	396				2136	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	396				2136	390
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				82	99
cM capacity (veh/h)	1163				54	658

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1739	396	17
Volume Left	7	0	10
Volume Right	0	11	8
cSH	1163	1700	90
Volume to Capacity	0.01	0.23	0.19
Queue Length 95th (ft)	0	0	17
Control Delay (s)	0.0	0.0	54.4
Lane LOS	A		F
Approach Delay (s)	0.0	0.0	54.4
Approach LOS			F

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

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

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	49	1548	342	21	52	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	1683	372	23	57	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	395				2172	383
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395				2172	383
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				0	91
cM capacity (veh/h)	1164				49	664

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1736	395	118
Volume Left	53	0	57
Volume Right	0	23	62
cSH	1164	1700	95
Volume to Capacity	0.05	0.23	1.25
Queue Length 95th (ft)	4	0	208
Control Delay (s)	8.2	0.0	255.2
Lane LOS	A		F
Approach Delay (s)	8.2	0.0	255.2
Approach LOS			F

Intersection Summary			
Average Delay	19.8		
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	175	0	36	0	805	168	5	352	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)		4.5			4.9		4.9	4.9			
Lane Util. Factor		0.97			0.95		1.00	1.00			
Frt		0.97			0.97		1.00	1.00			
Flt Protected		0.96			1.00		0.95	1.00			
Satd. Flow (prot)		3381			3447		1770	1863			
Flt Permitted		0.76			1.00		0.22	1.00			
Satd. Flow (perm)		2687			3447		403	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
Adj. Flow (vph)	190	0	39	0	875	183	5	383	0	0	0
RTOR Reduction (vph)	0	28	0	0	28	0	0	0	0	0	0
Lane Group Flow (vph)	0	201	0	0	1030	0	5	383	0	0	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)		15.3			30.8		30.8	30.8			
Effective Green, g (s)		15.3			30.8		30.8	30.8			
Actuated g/C Ratio		0.28			0.55		0.55	0.55			
Clearance Time (s)		4.5			4.9		4.9	4.9			
Vehicle Extension (s)		5.0			4.0		4.0	4.0			
Lane Grp Cap (vph)		741			1913		224	1034			
v/s Ratio Prot					c0.30			0.21			
v/s Ratio Perm		c0.07					0.01				
v/c Ratio		0.27			0.54		0.02	0.37			
Uniform Delay, d1		15.7			7.8		5.6	6.9			
Progression Factor		1.00			1.00		1.00	1.00			
Incremental Delay, d2		0.4			0.4		0.1	0.3			
Delay (s)		16.1			8.2		5.6	7.2			
Level of Service		B			A		A	A			
Approach Delay (s)		16.1			8.2			7.2		0.0	
Approach LOS		B			A			A		A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	9.4
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL
Lane Configurations												
Volume (vph)	29	9	11	35	774	1	42	288	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	0.97			0.87	0.85				1.00	0.85	0.86	0.90
Flt Protected	1.00			1.00	1.00				0.95	1.00	1.00	0.98
Satd. Flow (prot)	1803			1532	1504				3362	1583	1611	3196
Flt Permitted	1.00			0.99	1.00				0.95	1.00	1.00	0.46
Satd. Flow (perm)	1803			1525	1504				3362	1583	1611	1478
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	10	12	38	841	1	46	313	0	46	3	782
RTOR Reduction (vph)	6	0	0	0	0	0	0	0	0	39	3	0
Lane Group Flow (vph)	36	0	0	445	447	0	0	0	359	7	0	2412
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)	45.7			45.7	45.7				17.4	17.4	17.8	39.8
Effective Green, g (s)	45.7			45.7	45.7				17.4	17.4	17.8	39.8
Actuated g/C Ratio	0.39			0.39	0.39				0.15	0.15	0.15	0.34
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)	706			597	589				501	236	246	1090
v/s Ratio Prot	0.02										0.00	c0.75
v/s Ratio Perm				0.29	c0.30				0.11	0.00		
v/c Ratio	0.05			0.75	0.76				1.36dl	0.03	0.00	2.97dr
Uniform Delay, d1	22.0			30.5	30.7				47.3	42.4	41.9	38.5
Progression Factor	1.00			1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1			6.0	6.6				5.2	0.1	0.0	548.8
Delay (s)	22.1			36.5	37.4				52.5	42.5	41.9	587.2
Level of Service	C			D	D				D	D	D	F
Approach Delay (s)	22.1			36.9					51.4			587.2
Approach LOS	C			D					D			F

Intersection Summary

HCM Average Control Delay	391.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	116.7	Sum of lost time (s)	13.8
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	SER	SER2
Lane Configurations		
Volume (vph)	1499	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)	1629	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	86	1021	258	15	621	31	157	308	151	20	35	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	0.98	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3526	1583		3510		1770	1771		1770	1819	
Flt Permitted		0.83	1.00		0.92		0.73	1.00		0.28	1.00	
Satd. Flow (perm)		2921	1583		3229		1356	1771		525	1819	
Peak-hour factor, PHF	0.92	0.92	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	675	34	171	335	164	22	38	7
RTOR Reduction (vph)	0	0	116	0	6	0	0	29	0	0	4	0
Lane Group Flow (vph)	0	1203	164	0	719	0	171	470	0	22	41	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		518	676		200	694	
v/s Ratio Prot								c0.27			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	0.70		0.11	0.06	
Uniform Delay, d1		14.4	9.4		10.9		12.7	15.1		11.6	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	2.5		0.1	0.0	
Delay (s)		22.3	9.5		11.0		12.8	17.6		11.6	11.3	
Level of Service		C	A		B		B	B		B	B	
Approach Delay (s)		19.9			11.0			16.4			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	0.81		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	86.2%	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	1173	18	8	287	0	27	0	16	255	505	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3314	
Flt Permitted		1.00			0.92		0.19		1.00	0.95	1.00	
Satd. Flow (perm)		3531			3244		349		1583	1770	3314	
Peak-hour factor, PHF	0.92	0.92	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	277	549	403
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	10	0	223	0
Lane Group Flow (vph)	0	1293	0	0	321	0	29	0	7	277	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			0.16		
v/c Ratio		0.83			0.22		0.20		0.01	0.39	0.54	
Uniform Delay, d1		14.6			10.3		11.4		10.5	12.4	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	12.5	13.6	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.2			10.3			11.2			13.4	
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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	398	720	272	6	226	44	60	163	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)		3387			3451			3463				
Flt Permitted		0.75			0.92			0.99				
Satd. Flow (perm)		2581			3185			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)	433	783	296	7	246	48	65	177	16	0	0	0
RTOR Reduction (vph)	0	27	0	0	19	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1485	0	0	282	0	0	252	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		45.7			45.7			22.1				
Effective Green, g (s)		45.7			45.7			22.1				
Actuated g/C Ratio		0.60			0.60			0.29				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1542			1903			1000				
v/s Ratio Prot								c0.07				
v/s Ratio Perm		c0.58			0.09							
v/c Ratio		0.96			0.15			0.25				
Uniform Delay, d1		14.6			6.8			20.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		14.9			0.0			0.0				
Delay (s)		29.4			6.8			20.9				
Level of Service		C			A			C				
Approach Delay (s)		29.4			6.8			20.9			0.0	
Approach LOS		C			A			C			A	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	8.7
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	57	0	18	2	0	0	1	2190	29	40	1119	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		1.00	
Satd. Flow (prot)	1770	1583			1770			3539	1583		3530	
Flt Permitted	0.76	1.00			0.74			0.95	1.00		0.64	
Satd. Flow (perm)	1409	1583			1386			3379	1583		2276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	0	20	2	0	0	1	2380	32	43	1216	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	62	20	0	0	2	0	0	2381	28	0	1266	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)	14.0	14.0			14.0			43.8	43.8		43.8	
Effective Green, g (s)	14.0	14.0			14.0			43.8	43.8		43.8	
Actuated g/C Ratio	0.21	0.21			0.21			0.66	0.66		0.66	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	296	333			291			2222	1041		1497	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.04				0.00			c0.70	0.02		0.56	
v/c Ratio	0.21	0.06			0.01			1.07	0.03		0.85	
Uniform Delay, d1	21.7	21.0			20.8			11.4	4.0		8.8	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.2			0.0			41.6	0.0		4.8	
Delay (s)	22.5	21.2			20.8			53.0	4.0		13.6	
Level of Service	C	C			C			D	A		B	
Approach Delay (s)		22.2			20.8			52.3			13.6	
Approach LOS		C			C			D			B	

Intersection Summary

HCM Average Control Delay	38.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	8.8
Intersection Capacity Utilization	91.9%	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	174	59	86	114	0	0	0	0	181	1445	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						5024	
Flt Permitted		1.00			0.75						0.99	
Satd. Flow (perm)		1799			1395						5024	
Peak-hour factor, PHF	0.92	0.92	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	1571	85
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	246	0	0	217	0	0	0	0	0	1844	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						2573	
v/s Ratio Prot		0.14									c0.37	
v/s Ratio Perm					c0.16							
v/c Ratio		0.47			0.54						0.72	
Uniform Delay, d1		13.4			13.7						8.6	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.9			1.8						1.2	
Delay (s)		14.3			15.4						9.8	
Level of Service		B			B						A	
Approach Delay (s)		14.3			15.4			0.0			9.8	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	9.1
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	265	0	0	161	92	45	642	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			5010				
Flt Permitted		0.87			1.00			1.00				
Satd. Flow (perm)		1624			1771			5010				
Peak-hour factor, PHF	0.92	0.92	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	698	64	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	367	0	0	230	0	0	793	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			2206				
v/s Ratio Prot					0.13			c0.16				
v/s Ratio Perm		c0.23										
v/c Ratio		0.64			0.37			0.36				
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	0.49		
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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	636	163	0	0	0	0	0	0	886	836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.97									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3431									3450	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3431									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	177	0	0	0	0	0	0	963	909	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	38	0
Lane Group Flow (vph)	0	843	0	0	0	0	0	0	0	0	1834	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		31.1									48.9	
Effective Green, g (s)		31.1									48.9	
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									1900	
v/s Ratio Prot		c0.25										
v/s Ratio Perm											0.53	
v/c Ratio		0.70									0.97	
Uniform Delay, d1		24.8									19.1	
Progression Factor		1.00									1.00	
Incremental Delay, d2		2.9									13.7	
Delay (s)		27.8									32.8	
Level of Service		C									C	
Approach Delay (s)		27.8			0.0			0.0			32.8	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	8.8
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	370	1155	0	0	287	330	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	312	359	0	0	0	0	0
RTOR Reduction (vph)	37	0	0	0	0	86	0	0	0	0	0
Lane Group Flow (vph)	365	1255	0	0	312	273	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			19.2	19.2					
Effective Green, g (s)	71.4	71.4			19.2	19.2					
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)	1266	1266			681	305					
v/s Ratio Prot	0.21	c0.71			0.09						
v/s Ratio Perm						c0.17					
v/c Ratio	0.29	0.99			0.46	0.89					
Uniform Delay, d1	5.1	13.9			35.7	39.3					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.3	23.2			0.8	27.4					
Delay (s)	5.4	37.1			36.5	66.7					
Level of Service	A	D			D	E					
Approach Delay (s)		29.4			52.7			0.0		0.0	
Approach LOS		C			D			A		A	

Intersection Summary

HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	99.8	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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1013	563	6	51	0	0	0	0	0	955	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		1852						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	55	0	0	0	0	0	1038	182
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1101	604	0	62	0	0	0	0	0	1206	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		0.05							
v/c Ratio		1.03	0.67		0.09						1.00	
Uniform Delay, d1		21.4	14.7		9.6						32.5	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		36.1	2.5		0.1						25.3	
Delay (s)		57.4	17.2		9.7						57.8	
Level of Service		E	B		A						E	
Approach Delay (s)		43.0			9.7			0.0			57.8	
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	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1040	0	56	611	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			3524		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			3524		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1130	0	61	664	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1130	0	0	725	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	57.4			23.0		
Effective Green, g (s)	57.4			23.0		
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)	1134			905		
v/s Ratio Prot	c0.64			c0.21		
v/s Ratio Perm						
v/c Ratio	1.00			0.80		
Uniform Delay, d1	16.0			31.2		
Progression Factor	1.00			1.00		
Incremental Delay, d2	25.7			5.8		
Delay (s)	41.7			37.0		
Level of Service	D			D		
Approach Delay (s)	41.7			37.0	0.0	
Approach LOS	D			D	A	

Intersection Summary

HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	83.8%	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)	0	1474	145	111	376	0	0	0	0	376	1457	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						4937	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3492		1770	3539						4937	
Peak-hour factor, PHF	0.92	0.92	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	1584	316
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1755	0	121	409	0	0	0	0	0	2295	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		64.8		8.3	76.8						64.1	
Effective Green, g (s)		64.8		8.3	76.8						64.1	
Actuated g/C Ratio		0.43		0.06	0.51						0.43	
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)		1509		98	1812						2110	
v/s Ratio Prot		c0.50		c0.07	0.12						c0.46	
v/s Ratio Perm												
v/c Ratio		1.16		1.23	0.23						1.09	
Uniform Delay, d1		42.6		70.8	20.2						43.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		81.0		166.8	0.2						48.1	
Delay (s)		123.6		237.6	20.4						91.0	
Level of Service		F		F	C						F	
Approach Delay (s)		123.6			70.0			0.0			91.0	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	101.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	908	934	0	0	459	158	44	714	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		5071	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5071	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	776	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	58	0	0	18	0	0	0
Lane Group Flow (vph)	987	1015	0	0	499	114	0	824	9	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	80.4	108.7			24.6	24.6		26.0	26.0			
Effective Green, g (s)	80.4	108.7			24.6	24.6		26.0	26.0			
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)	990	2675			605	271		917	286			
v/s Ratio Prot	c0.56	0.29			c0.14			c0.16				
v/s Ratio Perm						0.07			0.01			
v/c Ratio	1.00	0.38			0.82	0.42		0.90	0.03			
Uniform Delay, d1	31.6	6.0			57.5	53.2		57.6	48.5			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	27.6	0.2			10.0	2.3		11.2	0.0			
Delay (s)	59.2	6.2			67.6	55.5		68.8	48.5			
Level of Service	E	A			E	E		E	D			
Approach Delay (s)		32.3			64.5			68.2			0.0	
Approach LOS		C			E			E			A	

Intersection Summary

HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	143.8	Sum of lost time (s)	12.8
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis 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	688	144	418	510	38	70	183	104	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	3347		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	3347		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	454	554	41	76	199	113	74	384	64
RTOR Reduction (vph)	0	12	0	0	3	0	0	61	0	0	10	0
Lane Group Flow (vph)	60	893	0	454	592	0	76	251	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)	7.0	39.5		36.8	69.3		8.1	18.8		7.7	28.4	
Effective Green, g (s)	7.0	39.5		36.8	69.3		8.1	18.8		7.7	28.4	
Actuated g/C Ratio	0.05	0.30		0.28	0.53		0.06	0.14		0.06	0.22	
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)	95	1047		501	1867		110	484		105	757	
v/s Ratio Prot	0.03	c0.26		c0.26	0.17		c0.04	0.08		0.04	c0.13	
v/s Ratio Perm												
v/c Ratio	0.63	0.85		0.91	0.32		0.69	0.52		0.70	0.58	
Uniform Delay, d1	60.2	42.5		44.9	17.1		59.7	51.4		60.0	45.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.6	7.5		19.5	0.2		14.0	1.9		16.1	1.7	
Delay (s)	69.9	50.1		64.4	17.3		73.7	53.3		76.1	47.2	
Level of Service	E	D		E	B		E	D		E	D	
Approach Delay (s)		51.3			37.7			57.3			51.3	
Approach LOS		D			D			E			D	

Intersection Summary

HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	81.6%	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)	136	498	215	154	651	114	284	462	55	101	638	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3460		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	3460		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)	148	541	234	167	708	124	309	502	60	110	693	184
RTOR Reduction (vph)	0	0	131	0	15	0	0	9	0	0	0	95
Lane Group Flow (vph)	148	541	103	167	817	0	309	553	0	110	693	89
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)	8.0	24.4	24.4	10.0	26.4		17.0	33.9		8.4	25.3	25.3
Effective Green, g (s)	8.0	24.4	24.4	10.0	26.4		17.0	33.9		8.4	25.3	25.3
Actuated g/C Ratio	0.08	0.26	0.26	0.11	0.28		0.18	0.36		0.09	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)	150	914	409	187	967		318	1249		157	947	424
v/s Ratio Prot	0.08	0.15		c0.09	c0.24		c0.17	0.16		0.06	c0.20	
v/s Ratio Perm			0.06									0.06
v/c Ratio	0.99	0.59	0.25	0.89	0.84		0.97	0.44		0.70	0.73	0.21
Uniform Delay, d1	43.2	30.7	27.8	41.7	32.1		38.5	23.1		41.8	31.5	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	68.7	1.4	0.6	36.6	7.4		42.4	0.5		10.9	3.6	0.5
Delay (s)	111.9	32.1	28.4	78.3	39.5		80.9	23.6		52.7	35.1	27.4
Level of Service	F	C	C	E	D		F	C		D	D	C
Approach Delay (s)		43.9			46.0			44.0			35.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	168	0	0	0	271	1960
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					5055
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5055
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	0	0	0	295	2130
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	183	0	0	0	0	2425
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					3129
v/s Ratio Prot	c0.10					c0.48
v/s Ratio Perm						
v/c Ratio	0.52					0.78
Uniform Delay, d1	17.8					6.9
Progression Factor	1.00					1.00
Incremental Delay, d2	2.5					1.5
Delay (s)	20.3					8.4
Level of Service	C					A
Approach Delay (s)	20.3		0.0			8.4
Approach LOS	C		A			A

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	155.2%	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)	7	272	0	0	169	489	2	636	1129	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)	892	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	691	1227	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	241	0	0	54	0	0	0
Lane Group Flow (vph)	8	296	0	0	184	291	0	693	1173	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	25.5	25.5			25.5	25.5		84.6	84.6			
Effective Green, g (s)	25.5	25.5			25.5	25.5		84.6	84.6			
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)	191	399			399	339		3609	1124			
v/s Ratio Prot		0.16			0.10			0.14				
v/s Ratio Perm	0.01					c0.18			c0.74			
v/c Ratio	0.04	0.74			0.46	0.86		0.19	1.04			
Uniform Delay, d1	37.2	43.8			40.9	45.1		5.8	17.3			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.2	9.4			2.2	21.2		0.1	39.0			
Delay (s)	37.4	53.2			43.0	66.3		5.9	56.3			
Level of Service	D	D			D	E		A	E			
Approach Delay (s)		52.7			60.3			38.1			0.0	
Approach LOS		D			E			D			A	

Intersection Summary

HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	9.1
Intersection Capacity Utilization	141.4%	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	415	1268	5	146	0	0	0	0	3	935	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)		1673		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1673		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	1378	5	159	0	0	0	0	3	1016	352
RTOR Reduction (vph)	0	57	0	0	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	1772	0	5	159	0	0	0	0	0	1019	181
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		93.9		1.1	98.7						36.1	36.1
Effective Green, g (s)		93.9		1.1	98.7						36.1	36.1
Actuated g/C Ratio		0.65		0.01	0.69						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)		1092		14	1278						888	397
v/s Ratio Prot		c1.06		c0.00	0.09						c0.29	
v/s Ratio Perm												0.11
v/c Ratio		1.62		0.36	0.12						1.15	0.46
Uniform Delay, d1		25.0		71.0	7.8						53.9	45.6
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		284.5		5.6	0.1						79.5	1.9
Delay (s)		309.5		76.7	7.8						133.4	47.5
Level of Service		F		E	A						F	D
Approach Delay (s)		309.5			9.9			0.0			111.4	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	214.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	133.4%	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 (veh/h)	7	562	26	57	49	32	5	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	28	62	53	35	5	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			639			851	852	320	567	849	71
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88			639			851	852	320	567	849	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			98	85	95	94	91	100
cM capacity (veh/h)	1506			941			222	274	676	326	276	977

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	313	334	150	77	48
Volume Left	8	0	62	5	18
Volume Right	0	28	35	32	3
cSH	1506	1700	941	354	309
Volume to Capacity	0.01	0.20	0.07	0.22	0.15
Queue Length 95th (ft)	0	0	5	20	14
Control Delay (s)	0.2	0.0	4.1	18.0	18.8
Lane LOS	A		A	C	C
Approach Delay (s)	0.1		4.1	18.0	18.8
Approach LOS				C	C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	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		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	11	44	38	98	12	138	77	1080	88	48	643	907
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	0.91	
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	3849		1947	3551	
Flt Permitted	0.75	1.00	1.00	0.73	1.00	1.00	0.25	1.00		0.25	1.00	
Satd. Flow (perm)	1535	2049	1742	1487	2049	1742	519	3849		519	3551	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	48	41	107	13	150	84	1174	96	52	699	986
RTOR Reduction (vph)	0	0	31	0	0	15	0	13	0	0	495	0
Lane Group Flow (vph)	12	48	10	107	13	135	84	1257	0	52	1190	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)	7.9	7.9	7.9	7.9	7.9	7.9	15.8	15.8		15.8	15.8	
Effective Green, g (s)	7.9	7.9	7.9	7.9	7.9	7.9	15.8	15.8		15.8	15.8	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	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)	383	511	434	371	511	434	259	1918		259	1770	
v/s Ratio Prot		0.02			0.01			0.33			c0.34	
v/s Ratio Perm	0.01		0.01	0.07		c0.08	0.16			0.10		
v/c Ratio	0.03	0.09	0.02	0.29	0.03	0.31	0.32	0.66		0.20	0.67	
Uniform Delay, d1	9.0	9.1	9.0	9.6	9.0	9.7	4.8	5.9		4.4	6.0	
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	0.0	0.1	0.0	0.4	0.0	0.4	0.7	0.8		0.4	1.0	
Delay (s)	9.0	9.2	9.0	10.1	9.0	10.1	5.5	6.7		4.8	7.0	
Level of Service	A	A	A	B	A	B	A	A		A	A	
Approach Delay (s)		9.1			10.0			6.7			7.0	
Approach LOS		A			B			A			A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	31.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	95	34	52	127	2	9
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)	103	37	57	138	2	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)	978			544		
pX, platoon unblocked						
vC, conflicting volume			140		373	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		373	122
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	99
cM capacity (veh/h)			1443		603	929

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	140	195	12
Volume Left	0	57	2
Volume Right	37	0	10
cSH	1700	1443	846
Volume to Capacity	0.08	0.04	0.01
Queue Length 95th (ft)	0	3	1
Control Delay (s)	0.0	2.4	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	2.4	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	98	34	9	10	321	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)	107	37	10	11	349	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)		469										
pX, platoon unblocked												
vC, conflicting volume	382			47			677	658	42	653	647	365
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382			47			677	658	42	653	647	365
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 %	91			99			98	98	99	97	98	96
cM capacity (veh/h)	1177			1561			318	347	1029	345	352	680

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	153	392	22	48
Volume Left	107	11	8	9
Volume Right	10	33	9	30
cSH	1177	1561	453	505
Volume to Capacity	0.09	0.01	0.05	0.09
Queue Length 95th (ft)	7	1	4	8
Control Delay (s)	6.0	0.3	13.4	12.9
Lane LOS	A	A	B	B
Approach Delay (s)	6.0	0.3	13.4	12.9
Approach LOS			B	B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	69	22	34	21	13	4	81	1067	11	7	766	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	1160	12	8	833	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)								699			472	
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1749	2330	551	1822	2458	586	1101			1172		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1501	2197	551	1589	2351	107	1101			809		
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	24	92	0	44	99	86			99		
cM capacity (veh/h)	35	32	478	19	25	773	630			678		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	136	41	88	773	399	8	555	546
Volume Left	75	23	88	0	0	8	0	0
Volume Right	37	4	0	0	12	0	0	268
cSH	45	23	630	1700	1700	678	1700	1700
Volume to Capacity	3.00	1.77	0.14	0.45	0.23	0.01	0.33	0.32
Queue Length 95th (ft)	369	130	12	0	0	1	0	0
Control Delay (s)	1089.0	722.8	11.6	0.0	0.0	10.4	0.0	0.0
Lane LOS	F	F	B			B		
Approach Delay (s)	1089.0	722.8	0.8			0.1		
Approach LOS	F	F						

Intersection Summary			
Average Delay	70.3		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	55	30	0	379	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	60	33	0	412	0	0	0	0	245	111	661

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	92	412	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	0.59	0.00	0.53	0.59
Capacity (veh/h)	609	671	533	631	1118
Control Delay (s)	9.2	15.1	8.9	14.4	10.6
Approach Delay (s)	9.2	15.1	0.0	12.0	
Approach LOS	A	C	A	B	

Intersection Summary			
Delay	12.7		
HCM Level of Service	B		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
89: M St & San Benito Street

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		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	141	325	10	5	138	35	6	4	18	60	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	353	11	5	150	38	7	4	20	65	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)		502										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	188			364			888	864	359	867	851	169
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	188			172			784	756	165	760	741	169
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			97	98	97	73	92	96
cM capacity (veh/h)	1386			1202			220	255	752	242	261	875

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	517	193	30	117
Volume Left	153	5	7	65
Volume Right	11	38	20	33
cSH	1386	1202	419	308
Volume to Capacity	0.11	0.00	0.07	0.38
Queue Length 95th (ft)	9	0	6	43
Control Delay (s)	3.1	0.3	14.3	23.8
Lane LOS	A	A	B	C
Approach Delay (s)	3.1	0.3	14.3	23.8
Approach LOS			B	C

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
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
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	139	140	77
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	151	152	84
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	862	690	194	953	723	117	236			126		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	862	690	194	953	723	117	236			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 %	0	0	91	0	0	97	97			90		
cM capacity (veh/h)	0	322	847	0	308	935	1331			1460		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	490	352	160	387
Volume Left	23	16	34	151
Volume Right	76	27	17	84
cSH	0	0	1331	1460
Volume to Capacity	Err	Err	0.03	0.10
Queue Length 95th (ft)	Err	Err	2	9
Control Delay (s)	Err	Err	1.8	3.6
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	1.8	3.6
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
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	529	1113	156	268	946	277
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	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3821		1947	3761	
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	3761	
Peak-hour factor, PHF	0.92	0.92	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	575	1210	170	291	1028	301
RTOR Reduction (vph)	0	0	291	0	0	315	0	18	0	0	39	0
Lane Group Flow (vph)	147	590	166	164	484	114	575	1362	0	291	1290	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	1066	
v/s Ratio Prot		0.15			0.24		c0.30	0.36		0.15	c0.34	
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	1.18	0.97		0.90	1.21	
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	100.8	17.7		25.4	103.6	
Delay (s)	119.7	19.7	18.3	101.9	37.0	17.5	123.3	36.4		49.9	125.1	
Level of Service	F	B	B	F	D	B	F	D		D	F	
Approach Delay (s)		31.5			39.1			61.9			111.6	
Approach LOS		C			D			E			F	

Intersection Summary

HCM Average Control Delay	65.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
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)	104	335	67	137	265	26	24	1336	342	116	1262	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	1372	103
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	218	0	0	44
Lane Group Flow (vph)	113	427	0	149	311	0	26	1452	154	126	1372	59
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	c0.35	
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	0.86	0.08
Uniform Delay, d1	31.3	27.8		30.3	24.4		33.0	22.5	15.8	31.5	19.1	12.8
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	9.2	44.1		9.3	3.2		2.4	31.3	0.2	15.2	5.0	0.1
Delay (s)	40.5	71.9		39.6	27.6		35.4	53.8	16.0	46.7	24.0	12.8
Level of Service	D	E		D	C		D	D	B	D	C	B
Approach Delay (s)		65.4			31.5			45.9			25.1	
Approach LOS		E			C			D			C	

Intersection Summary

HCM Average Control Delay	39.4	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
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	183	182	1365	412	254	2038
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	0.97
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	3759
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	3759
Peak-hour factor, PHF	0.92	0.92	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	199	198	1484	448	276	2215
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	19	0	0	18
Lane Group Flow (vph)	411	585	0	1037	746	0	0	397	1913	0	276	2860
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	1930
v/s Ratio Prot	0.11	c0.16		c0.27	0.19			c0.11	0.51		0.07	c0.76
v/s Ratio Perm												
v/c Ratio	0.96	1.24		1.42	0.93			1.75	1.02		1.00	1.48
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			354.6	25.4		52.7	219.6
Delay (s)	99.4	190.3		257.7	75.9			425.1	62.9		122.2	256.1
Level of Service	F	F		F	E			F	E		F	F
Approach Delay (s)		153.8			181.5				124.7			244.3
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	186.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		

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 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)	51	0	27	0	0	0	0	1081	79	29	1020	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)	55	0	29	0	0	0	0	1175	86	32	1109	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1835	2390	630	1759	2433	554	1109			1261		
vC1, stage 1 conf vol	1218	1218		1172	1172							
vC2, stage 2 conf vol	617	1172		588	1261							
vCu, unblocked vol	1835	2390	630	1759	2433	554	1109			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 %	60	100	93	100	100	100	100			94		
cM capacity (veh/h)	137	129	424	137	117	476	626			547		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	85	0	0	783	478	32	739	370
Volume Left	55	0	0	0	0	32	0	0
Volume Right	29	0	0	0	86	0	0	0
cSH	179	1700	1700	1700	1700	547	1700	1700
Volume to Capacity	0.47	0.00	0.00	0.46	0.28	0.06	0.43	0.22
Queue Length 95th (ft)	57	0	0	0	0	5	0	0
Control Delay (s)	42.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0
Lane LOS	E	A				B		
Approach Delay (s)	42.0	0.0	0.0			0.3		
Approach LOS	E	A						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

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	464	286	0	0	0	0	0	0	781	398	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	433	0
Approach Volume (veh/h)		815			0			0			1282	
Crossing Volume (veh/h)		1282#			0			1353#			0	
High Capacity (veh/h)		493			1385			465			1385	
High v/c (veh/h)		1.65			0.00			0.00			0.93	
Low Capacity (veh/h)		373			1161			349			1161	
Low v/c (veh/h)		2.19			0.00			0.00			1.10	

Intersection Summary			
Maximum v/c High	1.65		
Maximum v/c Low	2.19		
Intersection Capacity Utilization	112.7%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

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	58	222	0	0	0	0	0	1120	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	1217	153
Approach Volume (veh/h)		0			304			0			1217	
Crossing Volume (veh/h)		1280#			0			0			304	
High Capacity (veh/h)		494			1385			1385			1091	
High v/c (veh/h)		0.00			0.22			0.00			1.12	
Low Capacity (veh/h)		373			1161			1161			895	
Low v/c (veh/h)		0.00			0.26			0.00			1.36	

Intersection Summary			
Maximum v/c High	1.12		
Maximum v/c Low	1.36		
Intersection Capacity Utilization	80.5%	ICU Level of Service	D

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	568	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	617	403	0	0	0
RTOR Reduction (vph)	0	83	0	0	0	0	0	61	0	0	0	0
Lane Group Flow (vph)	0	1239	0	0	0	0	0	959	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	60.4%	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	0	0	0	63	505	210	988	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	1074	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	78	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	598	0	0	1224	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	0.52		
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	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	15	647	606	0	52	1078
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	703	659	0	57	1172
RTOR Reduction (vph)	0	173	0	0	0	0
Lane Group Flow (vph)	16	530	659	0	57	1172
Turn Type		Prot			Prot	
Protected Phases	2	2	4		3	8
Permitted Phases						
Actuated Green, G (s)	17.6	17.6	19.4		2.2	25.6
Effective Green, g (s)	17.6	17.6	19.4		2.2	25.6
Actuated g/C Ratio	0.34	0.34	0.38		0.04	0.50
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)	669	599	776		84	1947
v/s Ratio Prot	0.01	c0.30	c0.32		0.03	c0.30
v/s Ratio Perm						
v/c Ratio	0.02	0.88	0.85		0.68	0.60
Uniform Delay, d1	11.1	15.8	14.6		24.2	9.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	14.5	8.6		19.6	0.5
Delay (s)	11.1	30.4	23.2		43.8	9.7
Level of Service	B	C	C		D	A
Approach Delay (s)	29.9		23.2			11.3
Approach LOS	C		C			B

Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.6%	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	55	0	0	48	0	612	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	665	0	137	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	56	0	0	0
Lane Group Flow (vph)	0	60	0	0	52	0	665	0	81	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		21.0		21.0			
Effective Green, g (s)		6.5			6.5		21.0		21.0			
Actuated g/C Ratio		0.18			0.18		0.59		0.59			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		375			375		1152		1030			
v/s Ratio Prot		c0.03			0.03		c0.34					
v/s Ratio Perm									0.05			
v/c Ratio		0.16			0.14		0.58		0.08			
Uniform Delay, d1		12.2			12.2		4.5		3.1			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.2			0.2		0.7		0.0			
Delay (s)		12.4			12.3		5.2		3.1			
Level of Service		B			B		A		A			
Approach Delay (s)		12.4			12.3			4.8			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	656	192	18	100	0	0	400	93	56	532	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			0.97		1.00	0.98	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1979		1947	2049			1991		1947	2004	
Flt Permitted		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1979		1947	2049			1991		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	435	101	61	578	99
RTOR Reduction (vph)	0	10	0	0	0	0	0	8	0	0	5	0
Lane Group Flow (vph)	0	912	0	20	109	0	0	528	0	61	672	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		44.2		1.5	49.7			30.2		3.9	38.1	
Effective Green, g (s)		44.2		1.5	49.7			30.2		3.9	38.1	
Actuated g/C Ratio		0.46		0.02	0.52			0.32		0.04	0.40	
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)		913		30	1063			628		79	797	
v/s Ratio Prot		c0.46		c0.01	0.05			0.27		0.03	c0.34	
v/s Ratio Perm												
v/c Ratio		1.00		0.67	0.10			0.84		0.77	0.84	
Uniform Delay, d1		25.8		46.9	11.7			30.6		45.5	26.1	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		29.2		44.1	0.0			9.9		36.4	8.1	
Delay (s)		55.0		91.0	11.8			40.4		81.9	34.2	
Level of Service		D		F	B			D		F	C	
Approach Delay (s)		55.0			24.0			40.4			38.2	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	818	0	420	251	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)	889	0	457	273	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	889	0	457	273	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	24.4		15.7	15.7		
Effective Green, g (s)	24.4		15.7	15.7		
Actuated g/C Ratio	0.51		0.33	0.33		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	988		507	669		
v/s Ratio Prot	c0.46			0.13		
v/s Ratio Perm			c0.29			
v/c Ratio	0.90		0.90	0.41		
Uniform Delay, d1	10.7		15.5	12.6		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	10.9		19.1	0.4		
Delay (s)	21.6		34.5	13.0		
Level of Service	C		C	B		
Approach Delay (s)	21.6			26.5	0.0	
Approach LOS	C			C	A	

Intersection Summary

HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	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	171	21	115	122	0	0	0	0	202	716	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	778	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	784	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					28.2	28.2	
Effective Green, g (s)		11.7			13.0					28.2	28.2	
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)		364			401					846	889	
v/s Ratio Prot		c0.10			c0.13					0.11	c0.38	
v/s Ratio Perm												
v/c Ratio		0.56			0.64					0.26	0.88	
Uniform Delay, d1		24.2			23.8					11.7	16.8	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		1.9			3.5					0.2	10.3	
Delay (s)		26.1			27.3					11.9	27.1	
Level of Service		C			C					B	C	
Approach Delay (s)		26.1			27.3			0.0			23.8	
Approach LOS		C			C			A			C	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	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)	0	444	230	0	0	0	0	0	0	760	693	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	2040	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1955								1947	2040	
Peak-hour factor, PHF	0.92	0.92	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	826	753	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	826	774	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		47.0								55.7	55.7	
Effective Green, g (s)		47.0								55.7	55.7	
Actuated g/C Ratio		0.42								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)		830								980	1026	
v/s Ratio Prot		c0.37								c0.42	0.38	
v/s Ratio Perm												
v/c Ratio		0.87								0.84	0.75	
Uniform Delay, d1		29.0								23.7	22.0	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		9.5								6.7	3.2	
Delay (s)		38.5								30.4	25.2	
Level of Service		D								C	C	
Approach Delay (s)		38.5			0.0			0.0			27.9	
Approach LOS		D			A			A			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.2%	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)	106	1110	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	1207	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	1305	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)	0	221	40	239	44	0	0	0	0	388	1086	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	1180	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	1194	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		15.9		12.0	31.9					51.0	51.0	
Effective Green, g (s)		15.9		12.0	31.9					51.0	51.0	
Actuated g/C Ratio		0.17		0.13	0.35					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)		350		257	719					1092	1147	
v/s Ratio Prot		c0.14		c0.13	0.02					0.22	c0.58	
v/s Ratio Perm												
v/c Ratio		0.79		1.01	0.07					0.39	1.04	
Uniform Delay, d1		35.9		39.5	19.6					11.2	20.0	
Progression Factor		1.00		1.00	1.00					1.00	1.00	
Incremental Delay, d2		11.3		59.2	0.0					0.2	37.7	
Delay (s)		47.2		98.6	19.6					11.4	57.7	
Level of Service		D		F	B					B	E	
Approach Delay (s)		47.2			86.3			0.0			45.6	
Approach LOS		D			F			A			D	

Intersection Summary

HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	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)	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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	483	808	650	40	20	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3860		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3860		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	525	878	707	43	22	389
RTOR Reduction (vph)	0	0	7	0	0	330
Lane Group Flow (vph)	525	878	743	0	22	59
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	16.1	34.9	14.8		7.6	7.6
Effective Green, g (s)	16.1	34.9	14.8		7.6	7.6
Actuated g/C Ratio	0.32	0.69	0.29		0.15	0.15
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)	621	2690	1131		293	262
v/s Ratio Prot	c0.27	0.23	c0.19		0.01	
v/s Ratio Perm						c0.03
v/c Ratio	0.85	0.33	0.66		0.08	0.22
Uniform Delay, d1	16.0	3.1	15.6		18.4	18.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	10.3	0.1	1.4		0.1	0.4
Delay (s)	26.3	3.2	17.0		18.5	19.3
Level of Service	C	A	B		B	B
Approach Delay (s)		11.8	17.0		19.3	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.5	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

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)				932		
pX, platoon unblocked					0.80	
vC, conflicting volume			2338		3649	1169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2338		3814	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
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)					578							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	1568			1943			2791	3577	972	2605	3572	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1201			1943			2738	3725	972	2503	3719	215
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	42	0	100	99
cM capacity (veh/h)	459			298			7	3	252	0	3	628

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	459	1700	1700	1700	10	0
Volume to Capacity	0.07	0.76	0.61	0.31	52.00	Err
Queue Length 95th (ft)	6	0	0	0	Err	Err
Control Delay (s)	2.1	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	0.7		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		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	219	1542	1251	164	423	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.98		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3517	3478		1770	1583
Flt Permitted		0.51	1.00		0.95	1.00
Satd. Flow (perm)		1816	3478		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	238	1676	1360	178	460	195
RTOR Reduction (vph)	0	0	7	0	0	75
Lane Group Flow (vph)	0	1914	1531	0	460	120
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		111.0	111.0		31.0	31.0
Effective Green, g (s)		111.0	111.0		31.0	31.0
Actuated g/C Ratio		0.74	0.74		0.21	0.21
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)		1344	2574		366	327
v/s Ratio Prot			0.44		c0.26	
v/s Ratio Perm		c1.05				0.08
v/c Ratio		1.42	0.59		1.26	0.37
Uniform Delay, d1		19.5	9.1		59.5	51.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		195.2	0.4		136.0	0.7
Delay (s)		214.7	9.4		195.5	51.8
Level of Service		F	A		F	D
Approach Delay (s)		214.7	9.4		152.7	
Approach LOS		F	A		F	

Intersection Summary

HCM Average Control Delay	128.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	122.2%	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)	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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	693	691	478	304	0	0	0	0	1100	0	491
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						1725	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3274		1770	3539						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)	0	753	751	520	330	0	0	0	0	1196	0	534
RTOR Reduction (vph)	0	120	0	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	1384	0	520	330	0	0	0	0	0	1719	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						874	
v/s Ratio Prot		c0.42		c0.29	0.09							
v/s Ratio Perm											1.00	
v/c Ratio		1.67		1.84	0.21						1.97	
Uniform Delay, d1		56.0		63.0	25.9						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		306.5		390.3	0.1						439.3	
Delay (s)		362.5		453.3	26.0						476.3	
Level of Service		F		F	C						F	
Approach Delay (s)		362.5			287.4			0.0			476.3	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	395.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	178.8%	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	1325	0	0	634	188	155	0	342	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	1440	0	0	689	204	168	0	372	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	0	41	0	0
Lane Group Flow (vph)	486	1440	0	0	854	0	0	168	331	0	0
Turn Type	Prot						Perm		Perm		
Protected Phases	7	4			8			2			
Permitted Phases							2		2		
Actuated Green, G (s)	20.9	43.7			18.8			16.2	16.2		
Effective Green, g (s)	20.9	43.7			18.8			16.2	16.2		
Actuated g/C Ratio	0.31	0.64			0.28			0.24	0.24		
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)	545	2278			946			422	378		
v/s Ratio Prot	c0.27	0.41			c0.25						
v/s Ratio Perm								0.09	c0.21		
v/c Ratio	0.89	0.63			0.90			0.40	0.88		
Uniform Delay, d1	22.4	7.3			23.7			21.7	24.9		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	16.7	0.6			11.7			0.6	19.6		
Delay (s)	39.1	7.8			35.4			22.4	44.5		
Level of Service	D	A			D			C	D		
Approach Delay (s)		15.7			35.4			37.6		0.0	
Approach LOS		B			D			D		A	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	178.8%	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	1540	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	1674	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				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	950			1680			2547	2988	840	2115	2950	475
vC1, stage 1 conf vol							1942	1942		1004	1004	
vC2, stage 2 conf vol							604	1046		1111	1946	
vCu, unblocked vol	950			1239			2395	2984	118	1819	2933	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			89			97	100	99	59	100	86
cM capacity (veh/h)	719			418			63	77	683	171	51	536

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	133	1116	564	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	418	1700	1700	231	171	536
Volume to Capacity	0.18	0.66	0.33	0.11	0.34	0.22	0.05	0.41	0.14
Queue Length 95th (ft)	17	0	0	10	0	0	4	45	12
Control Delay (s)	11.1	0.0	0.0	14.7	0.0	0.0	21.3	39.6	12.8
Lane LOS	B			B			C	E	B
Approach Delay (s)	0.8			0.7			21.3	25.7	
Approach LOS							C	D	

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	1147	645	251	491	0	220	18	155	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	534	0	239	20	168	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	534			1948			1724	3027	267	2420	2677	974
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	534			1948			1724	3027	267	2420	2677	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	77	0	100	91
cM capacity (veh/h)	1030			297			10	1	731	0	2	251

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	831	1117	451	356	427	33
Volume Left	0	0	273	0	239	11
Volume Right	0	701	0	0	168	22
cSH	1700	1700	297	1700	10	0
Volume to Capacity	0.49	0.66	0.92	0.21	42.66	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		40.4		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	216	1478	0	0	524	163	228	0	445	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	1607	0	0	570	177	248	0	484	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			1607			2361	2823	803	1931	2734
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	747			1607			2361	2823	803	1931	2734
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			403			15	13	326	0	15

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	770	1071	380	367	248	484
Volume Left	235	0	0	0	248	0
Volume Right	0	0	0	177	0	484
cSH	857	1700	1700	1700	15	326
Volume to Capacity	0.27	0.63	0.22	0.22	16.84	1.48
Queue Length 95th (ft)	28	0	0	0	Err	663
Control Delay (s)	6.3	0.0	0.0	0.0	Err	262.9
Lane LOS	A				F	F
Approach Delay (s)	2.6		0.0		3561.3	
Approach LOS					F	

Intersection Summary			
Average Delay	786.2		
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	1069	820	8	678	55	283	43	7	34	120	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			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1842			1782			1680	
Flt Permitted	0.22	1.00	1.00	0.22	1.00			0.39			0.96	
Satd. Flow (perm)	414	1863	1583	414	1842			717			1621	
Peak-hour factor, PHF	0.92	0.92	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	47	8	37	130	396
RTOR Reduction (vph)	0	0	442	0	7	0	0	2	0	0	55	0
Lane Group Flow (vph)	490	1162	449	9	790	0	0	361	0	0	508	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			303			684	
v/s Ratio Prot		0.62			0.43							
v/s Ratio Perm	c1.18		0.28	0.02				c0.50			0.31	
v/c Ratio	2.95	1.56	0.71	0.05	1.07			1.19			0.74	
Uniform Delay, d1	13.5	13.5	11.3	8.3	13.5			13.0			10.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	894.4	258.4	3.6	0.1	54.3			114.4			4.4	
Delay (s)	907.9	271.9	14.9	8.4	67.8			127.4			15.3	
Level of Service	F	F	B	A	E			F			B	
Approach Delay (s)		304.4			67.1			127.4			15.3	
Approach LOS		F			E			F			B	

Intersection Summary

HCM Average Control Delay	206.6	HCM Level of Service	F
HCM Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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 & 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	275	0	0	495	118	271	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	299	0	0	538	128	295	66	122	0	0	0

Direction, Lane #	SB 1	SB 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	200	199	359	308	328	155
Volume Left (vph)	100	0	0	0	295	0
Volume Right (vph)	0	0	0	128	0	122
Hadj (s)	0.28	0.03	0.03	-0.26	0.48	-0.52
Departure Headway (s)	7.6	7.3	7.0	6.7	7.7	6.7
Degree Utilization, x	0.42	0.41	0.70	0.57	0.70	0.29
Capacity (veh/h)	458	474	502	518	446	513
Control Delay (s)	14.8	14.0	23.2	17.0	25.9	11.2
Approach Delay (s)	14.4		20.3		21.2	
Approach LOS	B		C		C	

Intersection Summary			
Delay	19.1		
HCM Level of Service	C		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

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					0.86	
vC, conflicting volume	130				902	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130				807	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				4	10
cM capacity (veh/h)	1455				303	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	303	919
Volume to Capacity	0.45	0.08	0.96	0.90
Queue Length 95th (ft)	0	0	242	317
Control Delay (s)	0.0	0.0	79.9	31.8
Lane LOS			F	D
Approach Delay (s)	0.0	0.0	44.3	
Approach LOS			E	

Intersection Summary			
Average Delay	24.5		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	197	591	275	488	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	214	642	299	530	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				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	530			857			1754	1664	535	1664	1985	265
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	530			748			1797	1691	372	1691	2067	265
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			59			0	100	100	0	0	0
cM capacity (veh/h)	1033			733			0	47	535	35	27	733

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	857	476	354	1062	502
Volume Left	0	299	0	99	0
Volume Right	642	0	0	251	502
cSH	1700	733	1700	36	733
Volume to Capacity	0.50	0.41	0.21	29.31	0.69
Queue Length 95th (ft)	0	50	0	Err	137
Control Delay (s)	0.0	10.6	0.0	Err	19.9
Lane LOS		B		F	C
Approach Delay (s)	0.0	6.1		6795.1	
Approach LOS				F	

Intersection Summary			
Average Delay	3271.9		
Intersection Capacity Utilization	131.8%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	6	535	0	0	0	0	1073	183	442	1261	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		301	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	1166	199	480	1371	0
RTOR Reduction (vph)	0	75	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	174	514	0	0	0	0	0	1356	0	480	1371	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		222	2614	
v/s Ratio Prot	0.10	c0.32						0.39			0.39	
v/s Ratio Perm										c1.60		
v/c Ratio	0.49	1.63						0.53		2.16	0.52	
Uniform Delay, d1	53.4	60.1						8.4		19.6	8.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.4	299.0						0.1		537.6	0.1	
Delay (s)	55.8	359.1						8.5		557.2	8.4	
Level of Service	E	F						A		F	A	
Approach Delay (s)		290.0			0.0			8.5			150.8	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	128.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	300	5	374	314	917	0	0	1330	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	997	0	0	1446	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	0.78	0.85	0.85	0.87	0.78			0.87		
vC, conflicting volume	3258	3347	945	2402	3568	498	1889			997		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2610	2715	377	1602	2976	122	1582			695		
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	486	0	0	788	323			779		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	329	409	341	498	498	964	925
Volume Left	326	0	341	0	0	0	0
Volume Right	0	407	0	0	0	0	443
cSH	0	0	323	1700	1700	1700	1700
Volume to Capacity	Err	Err	1.06	0.29	0.29	0.57	0.54
Queue Length 95th (ft)	Err	Err	314	0	0	0	0
Control Delay (s)	Err	Err	103.3	0.0	0.0	0.0	0.0
Lane LOS	F	F	F				
Approach Delay (s)	Err		26.4			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

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	998	82	6	1238	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	1085	89	7	1346	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	0.72	0.77	0.77	0.90	0.72			0.90		
vC, conflicting volume	2767	3145	689	2515	3116	587	1378			1174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2143	2632	0	1815	2596	333	757			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	41	87	0	0	72	52			99		
cM capacity (veh/h)	0	9	784	11	10	599	614			632		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	142	614	840	632	679	705
Volume Left	36	272	298	0	7	0
Volume Right	101	166	0	89	0	33
cSH	0	14	614	1700	632	1700
Volume to Capacity	Err	42.67	0.48	0.37	0.01	0.41
Queue Length 95th (ft)	Err	Err	66	0	1	0
Control Delay (s)	Err	Err	13.2	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	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	197	769	88	273	386	159	347	843	412	168	895	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	0.98		1.00	0.96		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	3485		1770	1781		1770	3365		1770	3406	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3485		1770	1781		1770	3365		1770	3406	
Peak-hour factor, PHF	0.92	0.92	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	96	297	420	173	377	916	448	183	973	325
RTOR Reduction (vph)	0	6	0	0	11	0	0	44	0	0	24	0
Lane Group Flow (vph)	214	926	0	297	582	0	377	1320	0	183	1274	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	785		412	414		131	1142		105	1105	
v/s Ratio Prot	0.12	c0.27		0.17	c0.33		c0.21	c0.39		0.10	0.37	
v/s Ratio Perm												
v/c Ratio	0.54	1.18		0.72	1.41		2.88	1.16		1.74	1.15	
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	93.7		5.2	196.9		865.6	80.2		370.6	79.3	
Delay (s)	46.8	146.0		53.0	248.7		928.1	124.8		434.1	124.9	
Level of Service	D	F		D	F		F	F		F	F	
Approach Delay (s)		127.5			183.4			298.8			163.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	203.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	110.6%	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)	155	495	101	480	506	176	58	890	171	97	707	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3449		1770	3402		1770	3454		1770	3480	
Flt Permitted	0.31	1.00		0.35	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	576	3449		656	3402		1770	3454		1770	3480	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	538	110	522	550	191	63	967	186	105	768	97
RTOR Reduction (vph)	0	11	0	0	23	0	0	11	0	0	6	0
Lane Group Flow (vph)	168	637	0	522	718	0	63	1142	0	105	859	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	41.3		12.2	43.9	
Effective Green, g (s)	84.8	84.8		84.8	84.8		9.6	41.3		12.2	43.9	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.06	0.27		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)	324	1941		369	1914		113	947		143	1014	
v/s Ratio Prot		0.18			0.21		0.04	c0.33		0.06	c0.25	
v/s Ratio Perm	0.29			c0.80								
v/c Ratio	0.52	0.33		1.41	0.38		0.56	1.21		0.73	0.85	
Uniform Delay, d1	20.3	17.7		32.9	18.3		68.5	54.7		67.7	50.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.2		202.0	0.2		3.4	102.8		15.4	7.3	
Delay (s)	22.9	17.9		234.9	18.5		71.8	157.5		83.1	57.5	
Level of Service	C	B		F	B		E	F		F	E	
Approach Delay (s)		18.9			107.9			153.0			60.3	
Approach LOS		B			F			F			E	

Intersection Summary

HCM Average Control Delay	92.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	97.4%	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)	155	1766	46	0	0	0	0	1131	48	73	916	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)	168	1920	50	0	0	0	0	1229	52	79	996	0
RTOR Reduction (vph)	0	0	20	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2088	30	0	0	0	0	1279	0	79	996	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	0.67	
Uniform Delay, d1		16.7	10.0					16.9		15.1	15.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		6.7	0.0					5.2		12.3	0.9	
Delay (s)		23.5	10.0					22.1		27.4	15.8	
Level of Service		C	B					C		C	B	
Approach Delay (s)		23.2			0.0			22.1			16.7	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	21.3	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	101.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	183	303	162	98	265	47	58	1148	70	67	760	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	107	288	51	63	1248	76	73	826	51
RTOR Reduction (vph)	0	0	65	0	0	41	0	0	32	0	0	30
Lane Group Flow (vph)	199	329	111	107	288	10	63	1248	44	73	826	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	1.14	0.09	0.43	0.75	0.04
Uniform Delay, d1	33.0	35.5	31.5	30.9	35.4	30.1	40.1	32.6	23.2	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	73.8	0.2	0.6	3.5	0.1
Delay (s)	35.4	50.1	32.6	31.1	44.9	30.2	40.6	106.5	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			39.9			98.9			33.0	
Approach LOS		D			D			F			C	

Intersection Summary

HCM Average Control Delay	61.8	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	81.5%	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	31	168	254	231	1153	0	0	845	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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)					3512	1583	1770	3539			3539	1583
Flt Permitted					0.99	1.00	0.28	1.00			1.00	1.00
Satd. Flow (perm)					3512	1583	519	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	34	183	276	251	1253	0	0	918	482
RTOR Reduction (vph)	0	0	0	0	0	60	0	0	0	0	0	164
Lane Group Flow (vph)	0	0	0	0	217	216	251	1253	0	0	918	318
Turn Type				Split		Perm	Perm					Perm
Protected Phases				8	8			2			6	
Permitted Phases						8	2					6
Actuated Green, G (s)					13.7	13.7	37.8	37.8			37.8	37.8
Effective Green, g (s)					13.7	13.7	37.8	37.8			37.8	37.8
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)					803	362	328	2233			2233	999
v/s Ratio Prot					0.06			0.35			0.26	
v/s Ratio Perm						c0.14	c0.48					0.20
v/c Ratio					0.27	0.60	0.77	0.56			0.41	0.32
Uniform Delay, d1					19.0	20.6	7.9	6.3			5.5	5.1
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.1	1.8	9.2	0.2			0.0	0.1
Delay (s)					19.1	22.4	17.1	6.5			5.6	5.2
Level of Service					B	C	B	A			A	A
Approach Delay (s)		0.0			20.9			8.3			5.4	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1564	17	39	1322	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	1700	18	42	1437	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	1717	0	42	1437	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	c0.34		0.02	0.28			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	2.6		1.6	6.6	3.4	0.0	0.0		109.6	0.1	0.1
Delay (s)	179.2	26.7		44.2	36.4	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)		50.2			35.1			18.5			66.4	
Approach LOS		D			D			B			E	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	8.6
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

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						
vC, conflicting volume			395		1001	395
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			395		1001	395
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)			1164		264	655

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	1164	301
Volume to Capacity	0.23	0.02	0.12
Queue Length 95th (ft)	0	2	10
Control Delay (s)	0.0	0.6	18.7
Lane LOS		A	C
Approach Delay (s)	0.0	0.6	18.7
Approach LOS			C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	500	211	0	0	143	89	0	63	0	91	27	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1770	3539			3539	1583		2049			1973	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.74	1.00
Satd. Flow (perm)	1770	3539			3539	1583		2049			1515	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)	543	229	0	0	155	97	0	68	0	99	29	546
RTOR Reduction (vph)	0	0	0	0	0	82	0	0	0	0	0	416
Lane Group Flow (vph)	543	229	0	0	155	15	0	68	0	0	128	130
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4		3	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	29.0	43.3			10.3	10.3		16.2			16.4	16.2
Effective Green, g (s)	29.0	43.3			10.3	10.3		16.2			16.4	16.2
Actuated g/C Ratio	0.43	0.64			0.15	0.15		0.24			0.24	0.24
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	756	2257			537	240		489			366	378
v/s Ratio Prot	c0.31	0.06			c0.04			0.03				
v/s Ratio Perm						0.01					c0.08	0.08
v/c Ratio	0.72	0.10			0.29	0.06		0.14			0.35	0.34
Uniform Delay, d1	16.1	4.8			25.5	24.7		20.4			21.3	21.4
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.3	0.0			0.6	0.2		0.0			0.6	0.2
Delay (s)	19.4	4.8			26.1	24.9		20.4			21.9	21.6
Level of Service	B	A			C	C		C			C	C
Approach Delay (s)		15.0			25.6			20.4			21.7	
Approach LOS		B			C			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)	67.9	Sum of lost time (s)	12.2
Intersection Capacity Utilization	56.8%	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)	84	425	126	94	361	114	104	265	114	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	0.95		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	3418		1770	3412		1770	1779		1770	1776	
Flt Permitted	0.44	1.00		0.38	1.00		0.17	1.00		0.39	1.00	
Satd. Flow (perm)	812	3418		715	3412		318	1779		721	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	137	102	392	124	113	288	124	108	447	200
RTOR Reduction (vph)	0	47	0	0	52	0	0	26	0	0	26	0
Lane Group Flow (vph)	91	552	0	102	464	0	113	386	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		23.4	23.4		23.4	23.4	
Effective Green, g (s)	26.0	26.0		26.0	26.0		23.4	23.4		23.4	23.4	
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)	365	1538		322	1535		129	720		292	719	
v/s Ratio Prot		c0.16			0.14			0.22			0.35	
v/s Ratio Perm	0.11			0.14			c0.35			0.15		
v/c Ratio	0.25	0.36		0.32	0.30		0.88	0.54		0.37	0.86	
Uniform Delay, d1	9.9	10.4		10.2	10.1		15.9	13.1		12.0	15.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.2	0.0		42.7	0.4		0.3	10.2	
Delay (s)	10.0	10.5		10.4	10.2		58.6	13.5		12.3	25.9	
Level of Service	A	B		B	B		E	B		B	C	
Approach Delay (s)		10.4			10.2			23.2			24.0	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	57.8	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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	109	1367	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	1486	274	0	0	0	0	317	320	88	425	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1835	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		0.89						0.87		0.62	0.55	
Uniform Delay, d1		14.8						14.6		12.5	12.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		4.8						10.8		5.4	0.4	
Delay (s)		19.6						25.5		18.0	12.5	
Level of Service		B						C		B	B	
Approach Delay (s)		19.6			0.0			25.5			13.4	
Approach LOS		B			A			C			B	

Intersection Summary

HCM Average Control Delay	19.8	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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	283	561	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	610	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	651			0			934	1266	0	1259	1246	326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	651			0			934	1266	0	1259	1246	326
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)	931			1622			168	136	1084	92	140	670

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	612	346	110	27	24
Volume Left	308	0	110	0	0
Volume Right	0	41	0	0	4
cSH	1622	1700	168	136	163
Volume to Capacity	0.19	0.20	0.65	0.20	0.15
Queue Length 95th (ft)	17	0	94	18	13
Control Delay (s)	4.8	0.0	60.0	38.0	30.8
Lane LOS	A		F	E	D
Approach Delay (s)	3.1		55.6		30.8
Approach LOS			F		D

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	267	104	339	184	153	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.96			1.00	0.94	
Flt Protected	1.00			0.97	0.97	
Satd. Flow (prot)	3390			3428	1706	
Flt Permitted	1.00			0.67	0.97	
Satd. Flow (perm)	3390			2379	1706	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	290	113	368	200	166	126
RTOR Reduction (vph)	58	0	0	0	48	0
Lane Group Flow (vph)	345	0	0	568	244	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	11.1			11.1	8.1	
Effective Green, g (s)	11.1			11.1	8.1	
Actuated g/C Ratio	0.39			0.39	0.28	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	1307			917	480	
v/s Ratio Prot	0.10					
v/s Ratio Perm				c0.24	c0.14	
v/c Ratio	0.26			1.03dl	0.51	
Uniform Delay, d1	6.1			7.1	8.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.9	0.3	
Delay (s)	6.1			8.0	9.0	
Level of Service	A			A	A	
Approach Delay (s)	6.1			8.0	9.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	28.8	Sum of lost time (s)	9.6
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

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

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	656	62	39	586	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	637	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			479		
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			780		1150	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			568		973	141
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		45	90
cM capacity (veh/h)			913		217	805

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1
Volume Total	475	305	255	425	202
Volume Left	0	0	42	0	118
Volume Right	0	67	0	0	84
cSH	1700	1700	913	1700	311
Volume to Capacity	0.28	0.18	0.05	0.25	0.65
Queue Length 95th (ft)	0	0	4	0	106
Control Delay (s)	0.0	0.0	1.9	0.0	35.7
Lane LOS			A		E
Approach Delay (s)	0.0		0.7		35.7
Approach LOS					E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	277	74	255	79	446	71	241	412	265	326	1473	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)		4.2			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	0.94		1.00	0.95	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1821		1770	1753		1770	1765	
Flt Permitted		0.42			0.85		0.05	1.00		0.18	1.00	
Satd. Flow (perm)		731			1565		98	1753		337	1765	
Peak-hour factor, PHF	0.92	0.92	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	277	86	485	77	262	448	288	354	1601	865
RTOR Reduction (vph)	0	11	0	0	4	0	0	17	0	0	14	0
Lane Group Flow (vph)	0	647	0	0	644	0	262	719	0	354	2452	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)		291			624		53	949		182	956	
v/s Ratio Prot								0.41			1.39	
v/s Ratio Perm		c0.88			0.41		c2.67			1.05		
v/c Ratio		2.22			1.03		4.94	0.76		1.95	2.57	
Uniform Delay, d1		42.1			42.1		32.1	25.0		32.1	32.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		560.9			44.7		1816.1	3.1		444.7	707.4	
Delay (s)		603.0			86.8		1848.2	28.1		476.8	739.5	
Level of Service		F			F		F	C		F	F	
Approach Delay (s)		603.0			86.8			505.9			706.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	575.8	HCM Level of Service	F
HCM Volume to Capacity ratio	3.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	232.9%	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)	205	499	155	226	450	94	140	880	156	139	801	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	0.97		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	1797		1770	3448		1770	3459		1770	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1797		1770	3448		1770	3459		1770	3421	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	542	168	246	489	102	152	957	170	151	871	250
RTOR Reduction (vph)	0	8	0	0	12	0	0	10	0	0	18	0
Lane Group Flow (vph)	223	702	0	246	579	0	152	1117	0	151	1103	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	18.0	43.8		22.9	48.7		10.0	52.3		12.0	54.3	
Effective Green, g (s)	18.0	43.8		22.9	48.7		10.0	52.3		12.0	54.3	
Actuated g/C Ratio	0.12	0.30		0.16	0.33		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)	216	534		275	1139		120	1227		144	1260	
v/s Ratio Prot	c0.13	c0.39		c0.14	0.17		c0.09	c0.32		0.09	0.32	
v/s Ratio Perm												
v/c Ratio	1.03	1.32		0.89	0.51		1.27	0.91		1.05	0.88	
Uniform Delay, d1	64.7	51.8		61.1	39.7		68.7	45.3		67.7	43.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	69.9	154.7		28.0	0.7		170.2	10.7		88.5	7.6	
Delay (s)	134.6	206.5		89.1	40.5		238.9	56.1		156.2	51.0	
Level of Service	F	F		F	D		F	E		F	D	
Approach Delay (s)		189.3			54.7			77.8			63.5	
Approach LOS		F			D			E			E	

Intersection Summary

HCM Average Control Delay	93.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	147.4	Sum of lost time (s)	16.4
Intersection Capacity Utilization	99.1%	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)	213	1195	408	0	0	0	0	870	222	238	1263	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					3431		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.16	1.00	
Satd. Flow (perm)		5047	1583					3431		294	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	946	241	259	1373	0
RTOR Reduction (vph)	0	0	22	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1531	421	0	0	0	0	1185	0	259	1373	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					1804		155	1861	
v/s Ratio Prot		c0.30						0.35			0.39	
v/s Ratio Perm			0.27							c0.88		
v/c Ratio		0.94	0.82					0.66		1.67	0.74	
Uniform Delay, d1		19.7	18.7					10.3		14.2	11.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		10.4	9.7					0.7		328.5	1.3	
Delay (s)		30.0	28.4					11.0		342.7	12.3	
Level of Service		C	C					B		F	B	
Approach Delay (s)		29.7			0.0			11.0			64.8	
Approach LOS		C			A			B			E	

Intersection Summary

HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.5%	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	0	0	84	568	95	163	1298	0	0	1226	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	0.13	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	243	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	91	617	103	177	1411	0	0	1333	200
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	0	91	617	84	177	1411	0	0	1333	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	142	2070			2070	926
v/s Ratio Prot				0.05	c0.33			0.40			0.38	
v/s Ratio Perm						0.05	c0.73					0.11
v/c Ratio				0.17	1.07	0.17	1.25	0.68			0.64	0.18
Uniform Delay, d1				20.1	27.6	20.1	16.6	11.5			11.1	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	156.4	1.2			1.0	0.2
Delay (s)				20.2	84.3	20.3	173.0	12.7			12.0	7.9
Level of Service				C	F	C	F	B			B	A
Approach Delay (s)		0.0			69.0			30.5			11.5	
Approach LOS		A			E			C			B	

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	91.5%	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)	113	421	166	243	370	103	125	986	247	65	995	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	3433		1770	3514	
Flt Permitted	0.39	1.00	1.00	0.33	1.00	1.00	0.14	1.00		0.13	1.00	
Satd. Flow (perm)	734	1863	1583	623	1863	1583	262	3433		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	1072	268	71	1082	53
RTOR Reduction (vph)	0	0	28	0	0	29	0	34	0	0	5	0
Lane Group Flow (vph)	123	458	152	264	402	83	136	1306	0	71	1130	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	121	1584		114	1622	
v/s Ratio Prot		0.25			0.22			0.38			0.32	
v/s Ratio Perm	0.17		0.10	c0.42		0.05	c0.52			0.29		
v/c Ratio	0.42	0.61	0.24	1.05	0.54	0.13	1.12	0.82		0.62	0.70	
Uniform Delay, d1	13.9	15.4	12.8	19.4	14.8	12.2	17.5	15.2		13.2	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	0.3	1.0	0.1	71.1	0.4	0.0	119.0	3.5		7.4	1.1	
Delay (s)	14.3	16.3	12.9	90.5	15.1	12.3	136.5	18.7		20.6	15.0	
Level of Service	B	B	B	F	B	B	F	B		C	B	
Approach Delay (s)		15.2			40.3			29.5			15.3	
Approach LOS		B			D			C			B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	112.8%	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)	254	486	59	0	0	0	30	965	85	304	999	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	3496		1770	3457	
Flt Permitted		0.98	1.00				0.13	1.00		0.17	1.00	
Satd. Flow (perm)		1831	1583				248	3496		322	3457	
Peak-hour factor, PHF	0.92	0.92	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	1049	92	330	1086	198
RTOR Reduction (vph)	0	0	9	0	0	0	0	7	0	0	15	0
Lane Group Flow (vph)	0	804	55	0	0	0	33	1134	0	330	1269	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				140	1972		182	1950	
v/s Ratio Prot		c0.44						0.32			0.37	
v/s Ratio Perm			0.04				0.13			c1.02		
v/c Ratio		1.28	0.10				0.24	0.58		1.81	0.65	
Uniform Delay, d1		32.8	22.3				11.0	14.1		21.8	15.0	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		136.3	0.0				1.2	0.5		386.8	0.9	
Delay (s)		169.1	22.3				12.2	14.6		408.6	15.9	
Level of Service		F	C				B	B		F	B	
Approach Delay (s)		158.3			0.0			14.5			96.2	
Approach LOS		F			A			B			F	

Intersection Summary

HCM Average Control Delay	84.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	1123	0	1244	467	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1221	0	1352	508	0
RTOR Reduction (vph)	0	840	0	0	0	0
Lane Group Flow (vph)	0	381	0	1352	508	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		14.1		22.9	13.6	
Effective Green, g (s)		14.1		22.9	13.6	
Actuated g/C Ratio		0.31		0.51	0.30	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		869		1793	1065	
v/s Ratio Prot				c0.38	c0.14	
v/s Ratio Perm		0.14				
v/c Ratio		0.44		0.75	0.48	
Uniform Delay, d1		12.4		8.9	12.9	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.8	0.5	
Delay (s)		12.5		10.7	13.4	
Level of Service		B		B	B	
Approach Delay (s)	12.5			10.7	13.4	
Approach LOS	B			B	B	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1157	70	0	734	0	0	0	0	543	1084	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)		3509			3539					1610	3382	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3509			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	1258	76	0	798	0	0	0	0	590	1178	728
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	1327	0	0	798	0	0	0	0	531	1237	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)		1350			1361					793	1665	779
v/s Ratio Prot		c0.38			0.23							
v/s Ratio Perm										0.33	0.37	c0.44
v/c Ratio		0.98			0.59					0.67	0.74	0.89
Uniform Delay, d1		19.8			15.9					12.5	13.2	14.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		20.4			0.7					2.2	1.8	12.4
Delay (s)		40.2			16.5					14.7	15.0	27.3
Level of Service		D			B					B	B	C
Approach Delay (s)		40.2			16.5			0.0			18.5	
Approach LOS		D			B			A			B	

Intersection Summary

HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	65.0	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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	611	730	0	341	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)	664	793	0	371	214	593
RTOR Reduction (vph)	0	529	0	0	0	33
Lane Group Flow (vph)	664	264	0	371	214	560
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	26.6	26.6		26.6	45.2	45.2
Effective Green, g (s)	26.6	26.6		26.6	45.2	45.2
Actuated g/C Ratio	0.33	0.33		0.33	0.57	0.57
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)	1177	526		1177	1000	894
v/s Ratio Prot	c0.19			0.10	0.12	
v/s Ratio Perm		0.17				c0.35
v/c Ratio	0.56	0.50		0.32	0.21	0.63
Uniform Delay, d1	21.9	21.4		19.9	8.6	11.7
Progression Factor	1.00	1.00		0.62	1.00	1.00
Incremental Delay, d2	0.6	0.8		0.1	0.0	1.0
Delay (s)	22.6	22.1		12.5	8.6	12.7
Level of Service	C	C		B	A	B
Approach Delay (s)	22.3			12.5	11.6	
Approach LOS	C			B	B	

Intersection Summary

HCM Average Control Delay	17.7	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	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	981	757	704	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)	1066	823	765	565	0	0
RTOR Reduction (vph)	0	0	0	431	0	0
Lane Group Flow (vph)	1066	823	765	134	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	22.5	45.2	19.0	19.0		
Effective Green, g (s)	22.5	45.2	19.0	19.0		
Actuated g/C Ratio	0.28	0.57	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)	1062	2200	925	414		
v/s Ratio Prot	c0.28	0.21	c0.20			
v/s Ratio Perm				0.08		
v/c Ratio	1.00	0.37	0.83	0.32		
Uniform Delay, d1	28.8	9.6	28.9	25.2		
Progression Factor	1.00	1.00	1.15	2.50		
Incremental Delay, d2	28.5	0.0	5.5	0.6		
Delay (s)	57.3	9.6	38.7	63.6		
Level of Service	E	A	D	E		
Approach Delay (s)		36.5	49.3		0.0	
Approach LOS		D	D		A	

Intersection Summary

HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	38.5
Intersection Capacity Utilization	71.4%	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)	566	853	174	138	701	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	3430		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	3430		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	927	189	150	762	198	390	832	52	490	858	189
RTOR Reduction (vph)	0	0	61	0	22	0	0	0	19	0	0	100
Lane Group Flow (vph)	615	927	128	150	938	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	0.70	0.22	0.56	0.99		0.99	0.97	0.09	1.00	0.90	0.21
Uniform Delay, d1	43.5	28.0	22.5	46.7	37.9		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	2.2	0.4	1.4	26.8		43.8	23.4	0.2	40.7	12.5	0.5
Delay (s)	92.6	30.2	22.9	48.1	64.7		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			62.4			69.9			58.7	
Approach LOS		D			E			E			E	

Intersection Summary

HCM Average Control Delay	59.8	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	89.9%	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)	148	313	52	235	450	462	121	147	33	84	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	0.98			0.94			0.99			0.92	
Flt Protected	0.95	1.00			0.99			0.98			0.98	
Satd. Flow (prot)	1770	4976			3292			1799			1687	
Flt Permitted	0.13	1.00			0.76			0.78			0.77	
Satd. Flow (perm)	248	4976			2534			1439			1328	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	340	57	255	489	502	132	160	36	91	9	132
RTOR Reduction (vph)	0	29	0	0	196	0	0	7	0	0	79	0
Lane Group Flow (vph)	161	369	0	0	1051	0	0	321	0	0	153	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	30.0	30.0			30.0			21.0			21.0	
Effective Green, g (s)	30.0	30.0			30.0			21.0			21.0	
Actuated g/C Ratio	0.50	0.50			0.50			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)	124	2488			1267			504			465	
v/s Ratio Prot		0.07										
v/s Ratio Perm	c0.65				0.41			c0.22			0.11	
v/c Ratio	1.30	0.15			0.83			0.64			0.33	
Uniform Delay, d1	15.0	8.1			12.8			16.3			14.3	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	181.1	0.0			4.4			1.9			0.2	
Delay (s)	196.1	8.1			17.2			18.3			14.5	
Level of Service	F	A			B			B			B	
Approach Delay (s)		62.4			17.2			18.3			14.5	
Approach LOS		E			B			B			B	

Intersection Summary

HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	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)	253	99	338	379	189	77	158	1205	50	104	1321	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		190	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	1310	54	113	1436	207
RTOR Reduction (vph)	0	0	23	0	13	0	0	3	0	0	10	0
Lane Group Flow (vph)	275	108	344	412	276	0	172	1361	0	113	1633	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		103	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		1.10	0.86	
Uniform Delay, d1	47.5	37.5	44.1	47.0	40.9		25.1	18.7		25.1	21.6	
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	78.6	288.9	7.0		729.5	1.8		117.3	5.0	
Delay (s)	148.8	37.7	122.7	335.9	47.9		754.6	20.5		142.4	26.6	
Level of Service	F	D	F	F	D		F	C		F	C	
Approach Delay (s)		120.0			217.2			102.7			34.1	
Approach LOS		F			F			F			C	

Intersection Summary

HCM Average Control Delay	97.0	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	94.8%	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)	247	721	790	0	0	0	0	1003	479	390	741	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					3368		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3368		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)	268	784	859	0	0	0	0	1090	521	424	805	0
RTOR Reduction (vph)	0	0	124	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	268	784	735	0	0	0	0	1581	0	424	805	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	50.3	50.3	50.3					56.8		27.8	89.8	
Effective Green, g (s)	50.3	50.3	50.3					56.8		27.8	89.8	
Actuated g/C Ratio	0.34	0.34	0.34					0.38		0.19	0.60	
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)	594	625	531					1275		328	2119	
v/s Ratio Prot	0.15	0.42						c0.47		c0.24	0.23	
v/s Ratio Perm			c0.46									
v/c Ratio	0.45	1.25	1.38					1.24		1.29	0.38	
Uniform Delay, d1	39.0	49.9	49.9					46.6		61.1	15.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	1.6	127.3	184.1					114.7		152.6	0.0	
Delay (s)	40.7	177.1	233.9					161.3		213.7	15.7	
Level of Service	D	F	F					F		F	B	
Approach Delay (s)		183.5			0.0			161.3			84.0	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	150.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	135.5%	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	0	0	335	511	609	647	594	0	0	786	1028
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	662	703	646	0	0	854	1117
RTOR Reduction (vph)	0	0	0	0	0	253	0	0	0	0	0	18
Lane Group Flow (vph)	0	0	0	0	919	409	703	646	0	0	854	1099
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	36.3	104.8			64.8	64.8
Effective Green, g (s)					34.6	34.6	36.3	104.8			64.8	64.8
Actuated g/C Ratio					0.23	0.23	0.24	0.70			0.43	0.43
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	428	2473			1529	684
v/s Ratio Prot					c0.26		c0.40	0.18			0.24	
v/s Ratio Perm						0.26						c0.69
v/c Ratio					1.15	1.12	1.64	0.26			0.56	1.61
Uniform Delay, d1					57.7	57.7	56.9	8.3			31.9	42.6
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					81.3	83.8	299.5	0.0			0.3	279.7
Delay (s)					139.0	141.5	356.4	8.4			32.1	322.3
Level of Service					F	F	F	A			C	F
Approach Delay (s)		0.0			140.0			189.7			196.6	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	176.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
40: H St & Fresno

4/11/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	214	336	1444	284	461	224	143	608	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	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	3702		1947	3722		1947	3883	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.17	1.00		0.19	1.00	
Satd. Flow (perm)	1947	2049	1742	1947	3702		342	3722		387	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)	233	365	1570	309	501	243	155	661	275	22	1304	23
RTOR Reduction (vph)	0	0	0	0	89	0	0	75	0	0	2	0
Lane Group Flow (vph)	233	365	1570	309	655	0	155	861	0	22	1325	0
Turn Type	Prot		Free	Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases			Free				4			8		
Actuated Green, G (s)	8.0	14.9	58.9	8.0	14.9		24.0	24.0		24.0	24.0	
Effective Green, g (s)	8.0	14.9	58.9	8.0	14.9		24.0	24.0		24.0	24.0	
Actuated g/C Ratio	0.14	0.25	1.00	0.14	0.25		0.41	0.41		0.41	0.41	
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)	264	518	1742	264	936		139	1517		158	1582	
v/s Ratio Prot	0.12	0.18		0.16	0.18			0.23			0.34	
v/s Ratio Perm			c0.90				c0.45			0.06		
v/c Ratio	0.88	0.70	0.90	1.17	0.70		1.12	0.57		0.14	0.84	
Uniform Delay, d1	25.0	20.0	0.0	25.4	20.0		17.4	13.5		11.0	15.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.3	4.3	8.0	109.5	2.3		110.6	0.5		0.4	4.1	
Delay (s)	52.3	24.3	8.0	135.0	22.3		128.0	13.9		11.4	19.7	
Level of Service	D	C	A	F	C		F	B		B	B	
Approach Delay (s)		15.5			55.3			30.2			19.6	
Approach LOS		B			E			C			B	

Intersection Summary

HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	69	8	63	117	4	90	421	80	825	39	208	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	0.88			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	1616			1947	1633			3503		1770	1863
Flt Permitted	0.15	1.00			0.71	1.00			0.52		0.22	1.00
Satd. Flow (perm)	282	1616			1448	1633			1825		413	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	458	87	897	42	226	1109
RTOR Reduction (vph)	0	0	0	0	0	97	0	0	3	0	0	0
Lane Group Flow (vph)	75	77	0	0	131	459	0	0	1023	0	226	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)	26.4	26.4			26.4	26.4			51.7		51.7	51.7
Effective Green, g (s)	26.4	26.4			26.4	26.4			51.7		51.7	51.7
Actuated g/C Ratio	0.30	0.30			0.30	0.30			0.59		0.59	0.59
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)	85	486			436	492			1076		243	1098
v/s Ratio Prot		0.05				c0.28						c0.60
v/s Ratio Perm	0.27				0.09				0.56		0.55	
v/c Ratio	0.88	0.16			0.30	0.93			1.00dl		0.93	1.01
Uniform Delay, d1	29.2	22.5			23.6	29.8			16.8		16.4	18.0
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	58.9	0.1			0.1	24.5			16.7		38.6	29.6
Delay (s)	88.1	22.6			23.7	54.3			33.5		55.0	47.6
Level of Service	F	C			C	D			C		D	D
Approach Delay (s)		54.9				48.4			33.5			37.4
Approach LOS		D				D			C			D

Intersection Summary

HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	87.7	Sum of lost time (s)	9.6
Intersection Capacity Utilization	130.6%	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

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)	209	0
Lane Group Flow (vph)	339	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	51.7	
Effective Green, g (s)	51.7	
Actuated g/C Ratio	0.59	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1027	
v/s Ratio Prot		
v/s Ratio Perm	0.19	
v/c Ratio	0.33	
Uniform Delay, d1	9.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	9.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	106	278	238	222	441	194	313	663	370	183	1052	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	0.93		1.00	0.95		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	1734		1770	3377		1770	3349		1770	3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1734		1770	3377		1770	3349		1770	3488	
Peak-hour factor, PHF	0.92	0.92	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	259	241	479	211	340	721	402	199	1143	123
RTOR Reduction (vph)	0	29	0	0	47	0	0	73	0	0	8	0
Lane Group Flow (vph)	115	532	0	241	643	0	340	1051	0	199	1258	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.6	31.8		10.9	33.1		14.9	32.5		13.2	30.8	
Effective Green, g (s)	9.6	31.8		10.9	33.1		14.9	32.5		13.2	30.8	
Actuated g/C Ratio	0.09	0.30		0.10	0.32		0.14	0.31		0.13	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)	162	525		184	1065		251	1037		223	1023	
v/s Ratio Prot	0.06	c0.31		c0.14	0.19		c0.19	0.31		0.11	c0.36	
v/s Ratio Perm												
v/c Ratio	0.71	1.01		1.31	0.60		1.35	1.01		0.89	1.23	
Uniform Delay, d1	46.3	36.6		47.0	30.4		45.0	36.2		45.2	37.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.3	42.5		172.8	1.4		183.4	31.2		32.9	112.2	
Delay (s)	59.7	79.1		219.8	31.8		228.4	67.5		78.1	149.3	
Level of Service	E	E		F	C		F	E		E	F	
Approach Delay (s)		75.8			80.5			104.9			139.6	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	106.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	228	982	78	0	0	0	0	860	255	327	1139	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5038	1583					3418		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.18	1.00	
Satd. Flow (perm)		5038	1583					3418		326	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	85	0	0	0	0	935	277	355	1238	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1315	46	0	0	0	0	1210	0	355	1238	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					2124		203	2199	
v/s Ratio Prot		c0.26						0.35			0.35	
v/s Ratio Perm			0.03							c1.09		
v/c Ratio		0.98	0.11					0.57		1.75	0.56	
Uniform Delay, d1		27.3	20.8					8.3		14.2	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		19.4	0.0					0.2		356.5	0.2	
Delay (s)		46.7	20.8					8.5		370.7	8.5	
Level of Service		D	C					A		F	A	
Approach Delay (s)		45.1			0.0			8.5			89.2	
Approach LOS		D			A			A			F	

Intersection Summary

HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.2%	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	0	0	57	693	262	127	1482	0	0	1315	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			4883	
Flt Permitted					1.00		0.11	1.00			1.00	
Satd. Flow (perm)					3731		197	3539			4883	
Peak-hour factor, PHF	0.92	0.92	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	138	1611	0	0	1429	517
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	1087	0	138	1611	0	0	1920	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			0.46			0.39	
v/s Ratio Perm							c0.70					
v/c Ratio					0.86		1.29	0.84			0.73	
Uniform Delay, d1					21.6		16.0	13.4			12.0	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					6.2		183.6	3.3			0.9	
Delay (s)					27.8		199.5	16.7			12.9	
Level of Service					C		F	B			B	
Approach Delay (s)		0.0			27.8			31.1			12.9	
Approach LOS		A			C			C			B	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.2%	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)	308	427	449	173	339	94	385	1221	166	56	1169	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	4994		1770	3539	1583
Flt Permitted	0.26	1.00	1.00	0.27	1.00		0.13	1.00		0.11	1.00	1.00
Satd. Flow (perm)	483	1863	1583	495	1802		234	4994		210	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	1327	180	61	1271	310
RTOR Reduction (vph)	0	0	29	0	9	0	0	16	0	0	0	106
Lane Group Flow (vph)	335	464	459	188	461	0	418	1491	0	61	1271	204
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		127	2701		114	1914	856
v/s Ratio Prot		0.25			0.26			0.30			0.36	
v/s Ratio Perm	c0.69		0.29	0.38			c1.79			0.29		0.13
v/c Ratio	1.84	0.66	0.77	1.01	0.68		3.29	0.55		0.54	0.66	0.24
Uniform Delay, d1	34.2	28.4	30.1	34.2	28.7		25.2	16.5		16.3	18.1	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	5.4	67.2	2.1		1051.1	0.1		2.4	0.7	0.1
Delay (s)	433.1	30.2	35.4	101.5	30.8		1076.3	16.7		18.7	18.8	13.4
Level of Service	F	C	D	F	C		F	B		B	B	B
Approach Delay (s)		137.0			51.0			246.8			17.7	
Approach LOS		F			D			F			B	

Intersection Summary

HCM Average Control Delay	129.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	12	247	43	794	44	424	412	612	13	17	763	822
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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)	559	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	863	48	461	448	665	14	18	829	893
RTOR Reduction (vph)	0	4	0	0	0	246	0	0	4	0	0	284
Lane Group Flow (vph)	13	311	0	449	462	215	448	665	10	18	829	609
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	30.0	65.8	65.8	4.2	40.0	40.0
Effective Green, g (s)	68.4	68.4		68.4	68.4	68.4	30.0	65.8	65.8	4.2	40.0	40.0
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)	252	822		368	356	714	350	1210	687	49	906	418
v/s Ratio Prot		0.17					c0.25	0.24		0.01	0.24	
v/s Ratio Perm	0.02			0.55	c0.59	0.14			0.01			c0.38
v/c Ratio	0.05	0.38		1.22	1.30	0.30	1.28	0.55	0.01	0.37	0.92	1.46
Uniform Delay, d1	23.4	27.5		41.6	41.6	26.4	60.8	31.9	24.4	72.4	54.2	55.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.3		121.2	153.3	0.3	146.3	0.9	0.0	1.7	14.1	218.4
Delay (s)	23.5	27.8		162.8	194.9	26.7	207.1	32.7	24.5	74.1	68.3	274.2
Level of Service	C	C		F	F	C	F	C	C	E	E	F
Approach Delay (s)		27.6			127.9		101.9				174.0	
Approach LOS		C			F		F				F	

Intersection Summary

HCM Average Control Delay	131.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	360	271	103	1600	592	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	0.68	1.00	0.35	1.00	1.00	1.00
Satd. Flow (perm)	1276	1583	661	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	295	112	1739	643	46
RTOR Reduction (vph)	0	90	0	0	0	26
Lane Group Flow (vph)	391	205	112	1739	643	20
Turn Type		custom	Perm			Perm
Protected Phases		4		2	6	
Permitted Phases	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)	532	660	286	1534	1534	686
v/s Ratio Prot		0.13		c0.49	0.18	
v/s Ratio Perm	c0.31		0.17			0.01
v/c Ratio	0.73	0.31	0.39	1.13	0.42	0.03
Uniform Delay, d1	14.7	11.7	11.6	17.0	11.8	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.1	0.3	68.8	0.1	0.0
Delay (s)	19.2	11.8	11.9	85.8	11.8	9.8
Level of Service	B	B	B	F	B	A
Approach Delay (s)	16.0			81.4	11.7	
Approach LOS	B			F	B	

Intersection Summary

HCM Average Control Delay	52.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	339	156	0	0	377	208	521	225	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			0.95			0.94				
Flt Protected		0.97			1.00			0.98				
Satd. Flow (prot)		3422			3351			4673				
Flt Permitted		0.61			1.00			0.98				
Satd. Flow (perm)		2158			3351			4673				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	170	0	0	410	226	566	245	577	0	0	0
RTOR Reduction (vph)	0	0	0	0	138	0	0	230	0	0	0	0
Lane Group Flow (vph)	0	538	0	0	498	0	0	1158	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		8			4		2	2				
Permitted Phases	8											
Actuated Green, G (s)		19.2			19.2			25.0				
Effective Green, g (s)		19.2			19.2			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)		764			1187			2155				
v/s Ratio Prot					0.15			c0.25				
v/s Ratio Perm		c0.25										
v/c Ratio		1.61dl			0.42			0.54				
Uniform Delay, d1		15.1			13.3			10.5				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		2.4			0.1			0.1				
Delay (s)		17.5			13.4			10.6				
Level of Service		B			B			B				
Approach Delay (s)		17.5			13.4			10.6			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	0.61		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	10.0
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	464	390	0	0	436	100	0	200	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		4.2				
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1770	1863			1863	1583		1863				
Flt Permitted	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1770	1863			1863	1583		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)	504	424	0	0	474	109	0	217	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	78	0	0	0	0	0	0
Lane Group Flow (vph)	504	424	0	0	474	31	0	217	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)	28.9	28.9			24.2	24.2		19.2				
Effective Green, g (s)	28.9	28.9			24.2	24.2		19.2				
Actuated g/C Ratio	0.34	0.34			0.28	0.28		0.23				
Clearance Time (s)	4.6	4.6			4.2	4.2		4.2				
Vehicle Extension (s)	3.8	3.8			2.0	2.0		2.0				
Lane Grp Cap (vph)	600	631			529	449		419				
v/s Ratio Prot	c0.28	0.23			c0.25			c0.12				
v/s Ratio Perm						0.02						
v/c Ratio	0.84	0.67			0.90	0.07		0.52				
Uniform Delay, d1	26.1	24.1			29.3	22.3		29.0				
Progression Factor	1.00	1.00			1.00	1.00		1.00				
Incremental Delay, d2	10.4	3.0			17.2	0.0		0.5				
Delay (s)	36.5	27.2			46.5	22.3		29.4				
Level of Service	D	C			D	C		C				
Approach Delay (s)		32.2			42.0			29.4			0.0	
Approach LOS		C			D			C			A	

Intersection Summary

HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.3%	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)	408	370	0	0	691	115	46	242	134	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			1823		1770	1763				
Flt Permitted	0.24	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	450	1863			1823		1770	1763				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	443	402	0	0	751	125	50	263	146	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	17	0	0	0	0
Lane Group Flow (vph)	443	402	0	0	871	0	50	392	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	88.8	88.8			88.8		22.8	22.8				
Effective Green, g (s)	88.8	88.8			88.8		22.8	22.8				
Actuated g/C Ratio	0.74	0.74			0.74		0.19	0.19				
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)	333	1379			1349		336	335				
v/s Ratio Prot		0.22			0.48		0.03	c0.22				
v/s Ratio Perm	c0.98											
v/c Ratio	1.33	0.29			0.65		0.15	1.17				
Uniform Delay, d1	15.6	5.2			7.8		40.5	48.6				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	167.9	0.0			0.8		0.1	103.8				
Delay (s)	183.5	5.2			8.6		40.6	152.4				
Level of Service	F	A			A		D	F				
Approach Delay (s)		98.7			8.6			140.2			0.0	
Approach LOS		F			A			F			A	

Intersection Summary

HCM Average Control Delay	71.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	97.4%	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	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	448	572	108	159	602	0	0	0	60	2571	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		0.92			0.90					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3241			3152					1770	3520	
Flt Permitted		1.00			0.51					0.95	1.00	
Satd. Flow (perm)		3241			1619					1770	3520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	487	622	117	173	654	0	0	0	65	2795	107
RTOR Reduction (vph)	0	45	0	0	267	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1064	0	0	677	0	0	0	0	65	2901	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			2		7	4		3	8	
Permitted Phases	2			2								
Actuated Green, G (s)		42.6			42.6					52.6	92.2	
Effective Green, g (s)		42.6			42.6					52.6	92.2	
Actuated g/C Ratio		0.29			0.29					0.36	0.63	
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)		948			474					639	2229	
v/s Ratio Prot		0.33								0.04	c0.82	
v/s Ratio Perm					c0.42							
v/c Ratio		1.17dr			1.43					0.10	1.30	
Uniform Delay, d1		51.5			51.5					30.8	26.7	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		68.9			204.3					0.0	139.0	
Delay (s)		120.4			255.8					30.9	165.7	
Level of Service		F			F					C	F	
Approach Delay (s)		120.4			255.8			0.0			162.7	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	170.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	145.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	145.4%	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	112	380	188	176	0	242	740	695	40	1398	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	191	0	263	804	755	43	1520	372
RTOR Reduction (vph)	0	84	0	0	0	0	0	0	228	0	0	23
Lane Group Flow (vph)	0	451	0	204	191	0	263	804	527	43	1520	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	0.10		c0.15	0.43		0.02	c0.82	
v/s Ratio Perm									0.33			0.22
v/c Ratio		1.39		1.20	0.32		1.45	1.02	0.79	0.14	1.66	0.45
Uniform Delay, d1		58.5		65.9	37.5		65.4	42.1	36.4	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	0.1		228.4	37.6	5.7	0.1	302.4	0.2
Delay (s)		250.6		198.9	37.6		293.8	79.7	42.1	51.5	339.5	24.4
Level of Service		F		F	D		F	E	D	D	F	C
Approach Delay (s)		250.6			120.9			95.0			272.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	188.2	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	140.4%	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	234	27	211	506	0	0	0	370	155	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)		1837		1770	1863			1583		1770	1848	
Flt Permitted		1.00		0.39	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1837		734	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	254	29	229	550	0	0	0	402	168	1673	90
RTOR Reduction (vph)	0	3	0	0	0	0	0	189	0	0	1	0
Lane Group Flow (vph)	0	280	0	229	550	0	0	213	0	168	1762	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		40.8		40.8	40.8			59.6		22.0	85.8	
Effective Green, g (s)		40.8		40.8	40.8			59.6		22.0	85.8	
Actuated g/C Ratio		0.30		0.30	0.30			0.44		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)		555		222	563			699		288	1175	
v/s Ratio Prot		0.15			0.30			0.13		0.09	c0.95	
v/s Ratio Perm				c0.31								
v/c Ratio		0.50		1.03	0.98			0.30		0.58	1.50	
Uniform Delay, d1		38.8		47.1	46.6			24.3		52.3	24.6	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3		68.9	31.6			0.1		1.9	229.3	
Delay (s)		39.0		116.0	78.3			24.4		54.2	253.9	
Level of Service		D		F	E			C		D	F	
Approach Delay (s)		39.0			89.3			24.4			236.5	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	161.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	153.2%	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)	452	1341	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	1458	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	1463	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	c0.53		c0.00			c0.02			c0.11
v/s Ratio Perm									0.09	
v/c Ratio	0.50	0.94		0.05			0.40		0.61	0.78
Uniform Delay, d1	13.5	20.5		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	11.3		0.3			0.9		6.2	14.1
Delay (s)	14.0	31.8		45.0			46.3		46.5	55.5
Level of Service	B	C		D			D		D	E
Approach Delay (s)	27.3			45.0			46.3	0.0		52.2
Approach LOS	C			D			D	A		D

Intersection Summary

HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	18.1
Intersection Capacity Utilization	77.3%	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)	262	296	8	113	263	182	237	266	1613	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	1753	32	0
Approach Volume (veh/h)		615			607				2332		0
Crossing Volume (veh/h)		380			2585#				607		607
High Capacity (veh/h)		1027			161				857		857
High v/c (veh/h)		0.60			3.77				2.72		0.00
Low Capacity (veh/h)		838			107				687		687
Low v/c (veh/h)		0.73			5.69				3.39		0.00

Intersection Summary			
Maximum v/c High	3.77		
Maximum v/c Low	5.69		
Intersection Capacity Utilization	128.6%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	440	74	0	1089	0	0	0	0	119	1718	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	1867	324
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	5
Lane Group Flow (vph)	0	552	0	0	1184	0	0	0	0	129	1867	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	c0.53	
v/s Ratio Perm												0.20
v/c Ratio		0.46			0.96					0.14	0.99	0.38
Uniform Delay, d1		20.3			25.6					9.3	18.3	10.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6			17.6					0.1	17.5	0.6
Delay (s)		20.8			43.2					9.5	35.8	11.4
Level of Service		C			D					A	D	B
Approach Delay (s)		20.8			43.2			0.0			30.9	
Approach LOS		C			D			A			C	

Intersection Summary

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	80.0	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

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	1688	608	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	1835	661	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	665				2509	663
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	665				2509	663
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				86	100
cM capacity (veh/h)	924				31	461

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1840	665	7
Volume Left	5	0	4
Volume Right	0	4	2
cSH	924	1700	45
Volume to Capacity	0.01	0.39	0.14
Queue Length 95th (ft)	0	0	12
Control Delay (s)	0.0	0.0	97.7
Lane LOS	A		F
Approach Delay (s)	0.0	0.0	97.7
Approach LOS			F

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

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

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	118	1626	547	69	73	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	1767	595	75	79	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	670				2656	632
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670				2656	632
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				0	46
cM capacity (veh/h)	921				22	480

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1896	670	340
Volume Left	128	0	79
Volume Right	0	75	261
cSH	921	1700	81
Volume to Capacity	0.14	0.39	4.21
Queue Length 95th (ft)	12	0	Err
Control Delay (s)	0.6	0.0	Err
Lane LOS	A		F
Approach Delay (s)	0.6	0.0	Err
Approach LOS			F

Intersection Summary			
Average Delay	1171.3		
Intersection Capacity Utilization	153.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	207	0	33	0	785	86	21	1011	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)		4.5			4.9		4.9	4.9			
Lane Util. Factor		0.97			0.95		1.00	1.00			
Frt		0.98			0.99		1.00	1.00			
Flt Protected		0.96			1.00		0.95	1.00			
Satd. Flow (prot)		3393			3487		1770	1863			
Flt Permitted		0.75			1.00		0.28	1.00			
Satd. Flow (perm)		2672			3487		525	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
Adj. Flow (vph)	225	0	36	0	853	93	23	1099	0	0	0
RTOR Reduction (vph)	0	10	0	0	4	0	0	0	0	0	0
Lane Group Flow (vph)	0	251	0	0	942	0	23	1099	0	0	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)		19.1			87.7		87.7	87.7			
Effective Green, g (s)		19.1			87.7		87.7	87.7			
Actuated g/C Ratio		0.16			0.75		0.75	0.75			
Clearance Time (s)		4.5			4.9		4.9	4.9			
Vehicle Extension (s)		5.0			4.0		4.0	4.0			
Lane Grp Cap (vph)		439			2632		396	1406			
v/s Ratio Prot					0.27			c0.59			
v/s Ratio Perm		c0.09					0.04				
v/c Ratio		0.93dl			0.36		0.06	0.78			
Uniform Delay, d1		44.8			4.8		3.7	8.5			
Progression Factor		1.00			1.00		1.00	1.00			
Incremental Delay, d2		2.9			0.1		0.1	3.1			
Delay (s)		47.6			4.9		3.7	11.6			
Level of Service		D			A		A	B			
Approach Delay (s)		47.6			4.9			11.4		0.0	
Approach LOS		D			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)	116.2	Sum of lost time (s)	9.4
Intersection Capacity Utilization	73.5%	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

Movement	EBT	EBR	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL2	SEL
Lane Configurations												
Volume (vph)	52	42	22	1545	2	9	691	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	0.94		0.85	0.85				1.00	0.85	0.86		0.91
Flt Protected	1.00		1.00	1.00				0.95	1.00	1.00		0.98
Satd. Flow (prot)	1750		1512	1504				3362	1583	1611		3232
Flt Permitted	1.00		1.00	1.00				0.95	1.00	1.00		0.95
Satd. Flow (perm)	1750		1512	1504				3362	1583	1611		3151
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	46	24	1679	2	10	751	0	48	7	1	1073
RTOR Reduction (vph)	19	0	0	0	0	0	0	0	32	6	0	0
Lane Group Flow (vph)	84	0	847	858	0	0	0	761	16	1	0	2556
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)	53.4		53.4	77.8				24.4	24.4	24.8		53.8
Effective Green, g (s)	53.4		53.4	77.8				24.4	24.4	24.8		53.8
Actuated g/C Ratio	0.36		0.36	0.52				0.16	0.16	0.17		0.36
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)	623		538	780				547	258	266		1146
v/s Ratio Prot	0.05		c0.56	0.18						0.00		c0.44
v/s Ratio Perm				0.39				0.23	0.01			c0.36
v/c Ratio	0.13		1.57	1.10				2.64dl	0.06	0.00		2.36dr
Uniform Delay, d1	32.7		48.3	36.1				62.8	53.1	52.3		52.1
Progression Factor	1.00		1.00	1.00				1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2		267.3	63.1				187.1	0.1	0.0		556.5
Delay (s)	32.9		315.6	99.2				249.9	53.3	52.3		608.6
Level of Service	C		F	F				F	D	D		F
Approach Delay (s)	32.9		206.7					238.2				608.6
Approach LOS	C		F					F				F

Intersection Summary

HCM Average Control Delay	406.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	154.1%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	SER	SER2
Lane Configurations		
Volume (vph)	1357	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)	1475	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)	75	1030	286	41	1187	158	153	232	85	297	306	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	0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3527	1583		3473		1770	1788		1770	1835	
Flt Permitted		0.59	1.00		0.82		0.39	1.00		0.42	1.00	
Satd. Flow (perm)		2072	1583		2841		723	1788		776	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	252	92	323	333	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	329	0	323	365	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		276	683		297	701	
v/s Ratio Prot								0.18			0.20	
v/s Ratio Perm		c0.58	0.14		0.53		0.23			c0.42		
v/c Ratio		1.13	0.28		1.02		0.60	0.48		1.09	0.52	
Uniform Delay, d1		21.8	12.3		21.8		22.3	21.1		27.8	21.4	
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		2.5	0.2		77.6	0.3	
Delay (s)		90.7	12.4		50.8		24.8	21.2		105.4	21.8	
Level of Service		F	B		D		C	C		F	C	
Approach Delay (s)		74.6			50.8			22.4			60.8	
Approach LOS		E			D			C			E	

Intersection Summary

HCM Average Control Delay	57.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
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

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	284	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	309	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	309	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	0.43	0.45	
Uniform Delay, d1		14.6			14.2		11.1		10.8	12.8	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	0.2	0.1	
Delay (s)		18.5			16.9		11.2		10.8	13.0	13.0	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.5			16.9			11.0			13.0	
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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	800	508	179	9	897	108	178	537	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.98			0.98			1.00				
Flt Protected		0.97			1.00			0.99				
Satd. Flow (prot)		3384			3481			3485				
Flt Permitted		0.50			0.93			0.99				
Satd. Flow (perm)		1732			3240			3485				
Peak-hour factor, PHF	0.92	0.92	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	195	10	975	117	193	584	18	0	0	0
RTOR Reduction (vph)	0	8	0	0	4	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	1609	0	0	1098	0	0	794	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)		1293			2418			667				
v/s Ratio Prot								c0.23				
v/s Ratio Perm		c0.93			0.34							
v/c Ratio		2.68dl			0.45			1.19				
Uniform Delay, d1		17.8			6.8			56.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		116.8			0.0			100.2				
Delay (s)		134.5			6.9			156.8				
Level of Service		F			A			F				
Approach Delay (s)		134.5			6.9			156.8			0.0	
Approach LOS		F			A			F			A	

Intersection Summary

HCM Average Control Delay	99.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	104.4%	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	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	29	0	23	0	0	2	1	2328	57	25	2269	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			0.86			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			1611			3539	1583		3537	
Flt Permitted	0.76	1.00			1.00			0.91	1.00		0.66	
Satd. Flow (perm)	1409	1583			1611			3205	1583		2344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	0	25	0	0	2	1	2530	62	27	2466	1
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	5	0	0	0
Lane Group Flow (vph)	32	24	0	0	1	0	0	2531	57	0	2494	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)	21.1	21.1			21.1			78.2	78.2		78.2	
Effective Green, g (s)	21.1	21.1			21.1			78.2	78.2		78.2	
Actuated g/C Ratio	0.20	0.20			0.20			0.72	0.72		0.72	
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)	275	309			314			2319	1145		1696	
v/s Ratio Prot		0.02			0.00							
v/s Ratio Perm	c0.02							0.79	0.04		c1.06	
v/c Ratio	0.12	0.08			0.00			1.09	0.05		1.47	
Uniform Delay, d1	35.8	35.6			35.0			14.9	4.3		14.9	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.2			0.0			48.9	0.0		215.0	
Delay (s)	36.2	35.8			35.0			63.9	4.3		230.0	
Level of Service	D	D			D			E	A		F	
Approach Delay (s)		36.0			35.0			62.5			230.0	
Approach LOS		D			D			E			F	

Intersection Summary

HCM Average Control Delay	143.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	111.0%	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)	0	326	160	164	303	0	0	0	0	184	1788	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						4995	
Flt Permitted		1.00			0.45						1.00	
Satd. Flow (perm)		1780			840						4995	
Peak-hour factor, PHF	0.92	0.92	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	1943	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	2347	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									c0.47	
v/s Ratio Perm					c0.60							
v/c Ratio		0.59			1.21						1.12	
Uniform Delay, d1		19.7			27.6						31.9	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		1.3			116.1						61.6	
Delay (s)		20.9			143.7						93.6	
Level of Service		C			F						F	
Approach Delay (s)		20.9			143.7			0.0			93.6	
Approach LOS		C			F			A			F	

Intersection Summary

HCM Average Control Delay	89.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	110	0	0	136	151	37	1517	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			5058				
Flt Permitted		0.78			1.00			1.00				
Satd. Flow (perm)		1457			1731			5058				
Peak-hour factor, PHF	0.92	0.92	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	1649	50	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	192	0	0	308	0	0	1733	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			0.72				
Uniform Delay, d1		11.6			12.3			9.0				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.9			1.7			0.9				
Delay (s)		12.5			13.9			9.9				
Level of Service		B			B			A				
Approach Delay (s)		12.5			13.9			9.9			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	9.1
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	563	227	0	0	0	0	0	0	857	585	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)		3387									3437	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3387									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	247	0	0	0	0	0	0	932	636	0
RTOR Reduction (vph)	0	60	0	0	0	0	0	0	0	0	87	0
Lane Group Flow (vph)	0	799	0	0	0	0	0	0	0	0	1481	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		29.1									34.3	
Effective Green, g (s)		29.1									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)		1365									1633	
v/s Ratio Prot		c0.24										
v/s Ratio Perm											0.43	
v/c Ratio		0.59									1.00dl	
Uniform Delay, d1		16.8									17.5	
Progression Factor		1.00									1.00	
Incremental Delay, d2		1.3									8.3	
Delay (s)		18.2									25.8	
Level of Service		B									C	
Approach Delay (s)		18.2			0.0			0.0			25.8	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	8.8
Intersection Capacity Utilization	77.6%	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

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	321	1101	0	0	507	824	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	551	896	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	551	863	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			0.16						
v/s Ratio Perm						c0.55					
v/c Ratio	0.29	1.26			0.39	1.36					
Uniform Delay, d1	19.1	34.8			31.7	44.8					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.4	126.1			0.3	169.9					
Delay (s)	19.4	160.9			32.0	214.7					
Level of Service	B	F			C	F					
Approach Delay (s)		129.0			145.1			0.0		0.0	
Approach LOS		F			F			A		A	

Intersection Summary

HCM Average Control Delay	136.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	82.7%	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)	0	1303	479	7	97	0	0	0	0	0	956	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		1.00						1.00	
Satd. Flow (prot)		1863	1583		1856						3403	
Flt Permitted		1.00	1.00		0.64						1.00	
Satd. Flow (perm)		1863	1583		1184						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	105	0	0	0	0	0	1039	357
RTOR Reduction (vph)	0	0	7	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	1416	514	0	113	0	0	0	0	0	1368	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		71.3	71.3		71.3						40.9	
Effective Green, g (s)		71.3	71.3		71.3						40.9	
Actuated g/C Ratio		0.59	0.59		0.59						0.34	
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)		1107	941		703						1160	
v/s Ratio Prot		c0.76									c0.40	
v/s Ratio Perm			0.32		0.10							
v/c Ratio		1.28	0.55		0.16						1.18	
Uniform Delay, d1		24.4	14.6		10.9						39.5	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		132.7	1.1		0.2						89.7	
Delay (s)		157.0	15.8		11.1						129.3	
Level of Service		F	B		B						F	
Approach Delay (s)		119.0			11.1			0.0			129.3	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	119.6	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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1305	0	105	721	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3517		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3517		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1418	0	114	784	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1418	0	0	898	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			814		
v/s Ratio Prot	c0.80			c0.26		
v/s Ratio Perm						
v/c Ratio	1.14			1.10		
Uniform Delay, d1	20.8			53.8		
Progression Factor	1.00			1.00		
Incremental Delay, d2	73.1			63.7		
Delay (s)	93.9			117.5		
Level of Service	F			F		
Approach Delay (s)	93.9			117.5	0.0	
Approach LOS	F			F	A	

Intersection Summary

HCM Average Control Delay	103.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis 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	1673	179	251	1353	0	0	0	0	364	1740	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						4893	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3488		1770	3539						4893	
Peak-hour factor, PHF	0.92	0.92	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	1891	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	2877	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						2058	
v/s Ratio Prot		c0.58		c0.15	0.42						c0.59	
v/s Ratio Perm												
v/c Ratio		1.49		1.42	0.80						1.40	
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						182.0	
Delay (s)		272.2		284.3	33.0						225.5	
Level of Service		F		F	C						F	
Approach Delay (s)		272.2			72.3			0.0			225.5	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	199.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	130.2%	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)	422	1610	0	0	1540	302	62	1620	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	1761	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	1828	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			c0.36				
v/s Ratio Perm						0.20			0.01			
v/c Ratio	1.28	0.80			1.21	0.51		1.14	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		72.4	0.0			
Delay (s)	202.6	22.4			143.5	33.8		120.4	33.3			
Level of Service	F	C			F	C		F	C			
Approach Delay (s)		59.9			125.5			118.9			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	99.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	130.2%	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)	121	1327	109	184	1298	145	172	647	217	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	3406		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	3406		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	200	1411	158	187	703	236	491	771	425
RTOR Reduction (vph)	0	4	0	0	6	0	0	22	0	0	52	0
Lane Group Flow (vph)	132	1556	0	200	1563	0	187	917	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	855		305	1303	
v/s Ratio Prot	0.07	0.44		c0.11	c0.45		0.11	0.27		c0.28	c0.34	
v/s Ratio Perm												
v/c Ratio	0.90	1.49		1.26	1.47		1.02	1.07		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		156.9	214.6		72.4	51.9		289.2	7.6	
Delay (s)	112.0	274.6		222.9	264.9		137.4	106.2		349.2	48.7	
Level of Service	F	F		F	F		F	F		F	D	
Approach Delay (s)		261.9			260.1			111.4			136.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	200.6	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	123.0%	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)	307	1343	437	167	1022	167	442	918	98	209	801	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	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)	334	1460	475	182	1111	182	480	998	107	227	871	290
RTOR Reduction (vph)	0	0	63	0	9	0	0	5	0	0	0	76
Lane Group Flow (vph)	334	1460	412	182	1284	0	480	1100	0	227	871	214
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	c0.19	0.41		0.10	c0.37		c0.27	0.32		0.13	c0.25	
v/s Ratio Perm			0.26									0.14
v/c Ratio	1.28	1.12	0.71	1.28	1.23		1.31	1.00		1.07	1.08	0.60
Uniform Delay, d1	64.0	47.5	40.6	69.0	52.5		59.5	51.5		66.0	58.0	51.8
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	154.1	66.0	4.5	169.8	113.0		158.5	28.2		81.8	56.2	4.0
Delay (s)	218.1	113.4	45.1	238.8	165.4		218.0	79.6		147.8	114.2	55.7
Level of Service	F	F	D	F	F		F	E		F	F	E
Approach Delay (s)		114.5			174.5			121.5			107.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	127.9	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	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	102	0	0	0	504	2551
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					5044
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5044
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	0	0	0	548	2773
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	111	0	0	0	0	3321
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					3834
v/s Ratio Prot	c0.06					c0.66
v/s Ratio Perm						
v/c Ratio	0.50					0.87
Uniform Delay, d1	32.5					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	3.4					2.5
Delay (s)	35.9					9.2
Level of Service	D					A
Approach Delay (s)	35.9		0.0			9.2
Approach LOS	D		A			A

Intersection Summary

HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	181.3%	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)	23	480	0	0	102	581	0	1187	1197	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	1290	1301	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	46	0	0	0
Lane Group Flow (vph)	25	522	0	0	111	586	0	1290	1255	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			c0.79			
v/c Ratio	0.07	0.89			0.19	1.18		0.41	1.29			
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	99.9		0.2	136.8			
Delay (s)	31.4	59.7			33.0	144.5		13.0	161.8			
Level of Service	C	E			C	F		B	F			
Approach Delay (s)		58.4			127.8			87.7			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	91.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	167.4%	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	594	1192	20	303	0	0	0	0	5	1819	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)		1695		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1695		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	1296	22	329	0	0	0	0	5	1977	733
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	1896	0	22	329	0	0	0	0	0	1982	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)		887		84	1111						1206	540
v/s Ratio Prot		c1.12		0.01	c0.18						c0.56	
v/s Ratio Perm												0.35
v/c Ratio		2.14		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		515.6		0.6	0.3						293.3	43.7
Delay (s)		550.2		67.3	14.6						341.2	91.5
Level of Service		F		E	B						F	F
Approach Delay (s)		550.2			17.9			0.0			273.8	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	363.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.87		
Actuated Cycle Length (s)	145.2	Sum of lost time (s)	13.3
Intersection Capacity Utilization	162.5%	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 (veh/h)	193	65	160	237	271	0	14	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	174	258	295	0	15	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			245			2560	1387	122	2148	1474	295
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	295			245			2560	1387	122	2148	1474	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			80			0	0	100	0	0	85
cM capacity (veh/h)	1264			1319			0	95	906	0	84	702

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	245	209	552	1782	2539
Volume Left	210	0	258	15	300
Volume Right	0	174	0	1	108
cSH	1264	1700	1319	0	0
Volume to Capacity	0.17	0.12	0.20	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	264.0%	ICU Level of Service	H
Analysis Period (min)	15		

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		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	79	33	157	221	468	120	440	621	120	147	1457	1374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.93	
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	3799		1947	3610	
Flt Permitted	0.29	1.00	1.00	0.73	1.00	1.00	0.25	1.00		0.29	1.00	
Satd. Flow (perm)	592	2049	1742	1503	2049	1742	509	3799		590	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	36	171	240	509	130	478	675	130	160	1584	1493
RTOR Reduction (vph)	0	0	3	0	0	74	0	38	0	0	120	0
Lane Group Flow (vph)	86	36	168	240	509	56	478	767	0	160	2957	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)	14.0	14.0	14.0	14.0	14.0	14.0	16.1	16.1		16.1	16.1	
Effective Green, g (s)	14.0	14.0	14.0	14.0	14.0	14.0	16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.37	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)	218	753	640	552	753	640	215	1605		249	1525	
v/s Ratio Prot		0.02			c0.25			0.20			0.82	
v/s Ratio Perm	0.15		0.10	0.16		0.03	c0.94			0.27		
v/c Ratio	0.39	0.05	0.26	0.43	0.68	0.09	2.22	0.48		0.64	1.94	
Uniform Delay, d1	8.9	7.8	8.4	9.1	10.1	7.9	11.0	8.0		8.7	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	1.2	0.0	0.2	0.6	2.4	0.1	565.3	0.2		5.6	425.1	
Delay (s)	10.1	7.8	8.7	9.6	12.6	7.9	576.3	8.2		14.3	436.1	
Level of Service	B	A	A	A	B	A	F	A		B	F	
Approach Delay (s)		9.0			11.1			219.8			415.3	
Approach LOS		A			B			F			F	

Intersection Summary

HCM Average Control Delay	287.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	151.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	235	88	76	510	22	38
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)	255	96	83	554	24	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)	986			536		
pX, platoon unblocked					0.93	
vC, conflicting volume			351		1023	303
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			351		986	303
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		90	94
cM capacity (veh/h)			1208		238	736

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	351	637	65
Volume Left	0	83	24
Volume Right	96	0	41
cSH	1700	1208	416
Volume to Capacity	0.21	0.07	0.16
Queue Length 95th (ft)	0	5	14
Control Delay (s)	0.0	1.8	15.3
Lane LOS		A	C
Approach Delay (s)	0.0	1.8	15.3
Approach LOS			C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	224	112	8	2	182	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)	243	122	9	2	198	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)		466										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	236			130			853	853	126	847	839	217
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	236			107			842	842	103	836	827	217
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 %	82			100			98	96	99	95	94	99
cM capacity (veh/h)	1331			1459			226	241	936	233	246	823

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	374	238	22	37
Volume Left	243	2	4	11
Volume Right	9	38	8	11
cSH	1331	1459	320	304
Volume to Capacity	0.18	0.00	0.07	0.12
Queue Length 95th (ft)	17	0	5	10
Control Delay (s)	6.0	0.1	17.1	18.5
Lane LOS	A	A	C	C
Approach Delay (s)	6.0	0.1	17.1	18.5
Approach LOS			C	C

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	153	10	141	17	10	14	93	1123	18	2	1247	99
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)	166	11	153	18	11	15	101	1221	20	2	1355	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)								687			485	
pX, platoon unblocked	0.79	0.79	0.70	0.79	0.79	0.82	0.70			0.82		
vC, conflicting volume	2247	2856	732	2273	2900	620	1463			1240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1025	1801	0	1059	1857	107	795			861		
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	79	80	77	77	98	82			100		
cM capacity (veh/h)	104	51	756	81	47	762	573			639		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	330	45	101	814	426	2	904	559
Volume Left	166	18	101	0	0	2	0	0
Volume Right	153	15	0	0	20	0	0	108
cSH	164	93	573	1700	1700	639	1700	1700
Volume to Capacity	2.02	0.48	0.18	0.48	0.25	0.00	0.53	0.33
Queue Length 95th (ft)	642	51	16	0	0	0	0	0
Control Delay (s)	524.9	75.1	12.6	0.0	0.0	10.7	0.0	0.0
Lane LOS	F	F	B			B		
Approach Delay (s)	524.9	75.1	1.0			0.0		
Approach LOS	F	F						

Intersection Summary				
Average Delay	56.0			
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	341	81	0	533	0	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	371	88	0	579	0	0	0	12	343	29	147

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	459	579	12	373	147
Volume Left (vph)	0	0	0	343	0
Volume Right (vph)	88	0	12	0	147
Hadj (s)	-0.08	0.03	-0.57	0.22	-0.57
Departure Headway (s)	6.4	6.4	7.9	7.0	3.2
Degree Utilization, x	0.81	1.03	0.03	0.73	0.13
Capacity (veh/h)	556	553	388	373	1121
Control Delay (s)	31.4	70.3	11.2	26.7	6.7
Approach Delay (s)	31.4	70.3	11.2	21.1	
Approach LOS	D	F	B	C	

Intersection Summary			
Delay	42.2		
HCM Level of Service	E		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (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)		1065										
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	74.7%	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)	34	474	0	7	382	35	4	2	6	71	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	515	0	8	415	38	4	2	7	77	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)		478										
pX, platoon unblocked												
vC, conflicting volume	453			515			1135	1058	258	789	1039	434
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	453			515			1135	1058	258	789	1039	434
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			96	99	99	71	85	86
cM capacity (veh/h)	1104			1047			116	214	741	268	220	570

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	295	258	461	13	190
Volume Left	37	0	8	4	77
Volume Right	0	0	38	7	79
cSH	1104	1700	1047	231	328
Volume to Capacity	0.03	0.15	0.01	0.06	0.58
Queue Length 95th (ft)	3	0	1	4	86
Control Delay (s)	1.3	0.0	0.2	21.5	30.1
Lane LOS	A		A	C	D
Approach Delay (s)	0.7		0.2	21.5	30.1
Approach LOS				C	D

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	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)	142	538	60	92	474	43	113	132	171	402	222	135
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	437	241	147
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	1975	1764	315	2028	1744	236	388			329		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1975	1764	315	2028	1744	236	388			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			64		
cM capacity (veh/h)	0	49	726	0	50	803	1170			1230		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	804	662	452	825
Volume Left	154	100	123	437
Volume Right	65	47	186	147
cSH	0	0	1170	1230
Volume to Capacity	Err	Err	0.10	0.36
Queue Length 95th (ft)	Err	Err	9	41
Control Delay (s)	Err	Err	3.1	7.1
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	3.1	7.1
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	133.7%	ICU Level of Service	H
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)	184	615	366	224	825	550	674	1463	176	494	1097	700
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	0.94	
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	3666	
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	3666	
Peak-hour factor, PHF	0.92	0.92	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	733	1590	191	537	1192	761
RTOR Reduction (vph)	0	0	206	0	0	207	0	13	0	0	53	0
Lane Group Flow (vph)	200	668	192	243	897	391	733	1768	0	537	1901	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	11.0	23.0		9.0	21.0	
Effective Green, g (s)	26.0	26.0	26.0	26.0	26.0	26.0	11.0	23.0		9.0	21.0	
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.37	0.16	0.33		0.13	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	
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	306	1259		250	1100	
v/s Ratio Prot		0.17			0.44		c0.38	0.46		0.28	c0.52	
v/s Ratio Perm	c0.63		0.11	0.40		0.22						
v/c Ratio	1.71	0.46	0.30	1.08	1.18	0.60	2.40	1.40		2.15	1.73	
Uniform Delay, d1	22.0	16.7	15.5	22.0	22.0	17.8	29.5	23.5		30.5	24.5	
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	352.8	0.2	0.3	82.9	93.8	1.6	637.9	186.6		529.7	331.3	
Delay (s)	374.8	16.9	15.8	104.9	115.8	19.4	667.4	210.1		560.2	355.8	
Level of Service	F	B	B	F	F	B	F	F		F	F	
Approach Delay (s)		73.1			81.1			343.4			399.9	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	261.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	157.0%	ICU Level of Service	H
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	2574	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	2798	38
RTOR Reduction (vph)	0	28	0	0	6	0	0	0	13	0	0	5
Lane Group Flow (vph)	71	31	0	53	41	0	1	1768	29	20	2798	33
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	c0.72	
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	1.21	0.03
Uniform Delay, d1	33.5	29.5		34.7	31.1		37.0	12.6	7.0	35.9	15.4	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	98.7	0.0
Delay (s)	35.8	29.8		38.0	31.6		37.6	14.6	7.0	38.6	114.1	6.4
Level of Service	D	C		D	C		D	B	A	D	F	A
Approach Delay (s)		33.1			35.0			14.4			112.1	
Approach LOS		C			C			B			F	

Intersection Summary

HCM Average Control Delay	72.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
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)	653	621	517	1124	914	32	281	271	1920	443	502	2970
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	3788
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	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)	710	675	562	1222	993	35	305	295	2087	482	546	3228
RTOR Reduction (vph)	0	90	0	0	0	0	0	0	13	0	0	12
Lane Group Flow (vph)	710	1147	0	1222	1028	0	0	600	2556	0	546	3921
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	1818
v/s Ratio Prot	0.19	c0.32		c0.32	0.27			c0.16	0.68		0.14	c1.03
v/s Ratio Perm												
v/c Ratio	1.88	1.69		2.02	1.08			2.38	1.45		1.81	2.16
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	52.0			633.5	204.5		376.5	522.3
Delay (s)	472.7	379.6		529.2	108.5			703.5	244.5		445.5	561.3
Level of Service	F	F		F	F			F	F		F	F
Approach Delay (s)		413.5			337.0				331.4			547.1
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	427.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	197.7%	ICU Level of Service	H
Analysis Period (min)	15		

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
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)	150	0	96	0	0	0	0	1562	96	61	1990	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)	163	0	104	0	0	0	0	1698	104	66	2163	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2964	4046	901	3145	4098	1082	2163			1802		
vC1, stage 1 conf vol	1750	1750		2296	2296							
vC2, stage 2 conf vol	1214	2296		849	1802							
vCu, unblocked vol	2964	4046	901	3145	4098	1082	2163			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	100	63	100	100	100	100			80		
cM capacity (veh/h)	54	38	281	24	29	213	244			338		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	267	0	0	1132	670	66	1442	721
Volume Left	163	0	0	0	0	66	0	0
Volume Right	104	0	0	0	104	0	0	0
cSH	79	1700	1700	1700	1700	338	1700	1700
Volume to Capacity	3.40	0.00	0.00	0.67	0.39	0.20	0.85	0.42
Queue Length 95th (ft)	Err	0	0	0	0	18	0	0
Control Delay (s)	Err	0.0	0.0	0.0	0.0	18.2	0.0	0.0
Lane LOS	F	A				C		
Approach Delay (s)	Err	0.0	0.0			0.5		
Approach LOS	F	A						

Intersection Summary			
Average Delay	622.2		
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

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	1950	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	2407	0
Approach Volume (veh/h)		545			0			0			3835	
Crossing Volume (veh/h)		3835#			0			1611#			0	
High Capacity (veh/h)		52			1385			374			1385	
High v/c (veh/h)		10.49			0.00			0.00			2.77	
Low Capacity (veh/h)		30			1161			274			1161	
Low v/c (veh/h)		18.36			0.00			0.00			3.30	

Intersection Summary			
Maximum v/c High	10.49		
Maximum v/c Low	18.36		
Intersection Capacity Utilization	202.5%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

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	2654	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	3738	899
Approach Volume (veh/h)		0			1340			0			3738	
Crossing Volume (veh/h)		4338#			0			0			1340#	
High Capacity (veh/h)		32			1385			1385			470	
High v/c (veh/h)		0.00			0.97			0.00			7.96	
Low Capacity (veh/h)		17			1161			1161			353	
Low v/c (veh/h)		0.00			1.15			0.00			10.58	

Intersection Summary			
Maximum v/c High	7.96		
Maximum v/c Low	10.58		
Intersection Capacity Utilization	202.6%	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)	362	957	0	0	0	0	0	405	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						5400				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3840						5400				
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	455	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	555	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	664	793	371	398	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	442	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	742	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			19.8				
Level of Service					B			B				
Approach Delay (s)		0.0			13.8			19.8			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)	530	1075	602	0	42	2202
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	1208	654	0	47	2474
RTOR Reduction (vph)	0	118	0	0	0	0
Lane Group Flow (vph)	596	1090	654	0	47	2474
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8
Permitted Phases		2				
Actuated Green, G (s)	55.0	55.0	49.8		4.0	57.8
Effective Green, g (s)	55.0	55.0	49.8		4.0	57.8
Actuated g/C Ratio	0.46	0.46	0.41		0.03	0.48
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)	886	793	845		64	1863
v/s Ratio Prot	0.31		0.32		0.02	c0.64
v/s Ratio Perm		c0.63				
v/c Ratio	0.67	1.37	0.77		0.73	1.33
Uniform Delay, d1	25.8	32.9	30.6		57.9	31.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.0	176.4	4.5		35.0	151.4
Delay (s)	27.9	209.3	35.1		92.9	182.9
Level of Service	C	F	D		F	F
Approach Delay (s)	149.3		35.1			181.2
Approach LOS	F		D			F

Intersection Summary

HCM Average Control Delay	150.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	37	0	0	995	0	623	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	670	0	186	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	0	49	0	0	1363	0	670	0	59	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)		81.0			81.0		41.0		41.0			
Effective Green, g (s)		81.0			81.0		41.0		41.0			
Actuated g/C Ratio		0.62			0.62		0.32		0.32			
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)		1277			1277		614		549			
v/s Ratio Prot		0.02			c0.67		c0.34					
v/s Ratio Perm									0.03			
v/c Ratio		0.04			1.07		1.09		0.11			
Uniform Delay, d1		9.5			24.5		44.5		31.5			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			45.3		63.7		0.1			
Delay (s)		9.5			69.8		108.2		31.6			
Level of Service		A			E		F		C			
Approach Delay (s)		9.5			69.8			91.5			0.0	
Approach LOS		A			E			F			A	

Intersection Summary

HCM Average Control Delay	76.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.6%	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	468	107	123	185	0	0	370	370	0	1644	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			0.93			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1992		1947	2049			1895			2024	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1992		1947	2049			1895			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	402	402	0	2192	196
RTOR Reduction (vph)	0	5	0	0	0	0	0	19	0	0	2	0
Lane Group Flow (vph)	0	696	0	256	385	0	0	785	0	0	2386	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			1134			1212	
v/s Ratio Prot		c0.35		c0.13	0.19			0.41			c1.18	
v/s Ratio Perm												
v/c Ratio		1.46		1.70	0.54			0.69			1.97	
Uniform Delay, d1		54.0		65.5	37.5			19.5			28.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		217.7		339.7	0.9			1.8			438.9	
Delay (s)		271.7		405.2	38.4			21.4			467.4	
Level of Service		F		F	D			C			F	
Approach Delay (s)		271.7			184.9			21.4			467.4	
Approach LOS		F			F			C			F	

Intersection Summary

HCM Average Control Delay	318.1	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	143.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	698	0	228	237	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)	862	0	275	286	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	862	0	275	286	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	17.4		11.9	11.9		
Effective Green, g (s)	17.4		11.9	11.9		
Actuated g/C Ratio	0.47		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)	908		495	654		
v/s Ratio Prot	c0.44			0.14		
v/s Ratio Perm			c0.18			
v/c Ratio	0.95		0.56	0.44		
Uniform Delay, d1	9.5		10.5	10.1		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	18.5		1.4	0.5		
Delay (s)	28.1		11.9	10.5		
Level of Service	C		B	B		
Approach Delay (s)	28.1			11.2	0.0	
Approach LOS	C			B	A	

Intersection Summary

HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.0%	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	129	72	230	476	0	0	0	0	226	1549	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	1912	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	1929	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	c0.94	
v/s Ratio Perm												
v/c Ratio		1.13			1.58					0.28	1.86	
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	390.8	
Delay (s)		163.2			319.2					20.3	425.8	
Level of Service		F			F					C	F	
Approach Delay (s)		163.2			319.2			0.0			374.6	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	343.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	141.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (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	365	403	0	0	0	0	0	0	590	1385	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	702	1649	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	702	1708	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		50.0								84.0	84.0	
Effective Green, g (s)		50.0								84.0	84.0	
Actuated g/C Ratio		0.35								0.59	0.59	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		670								1152	1206	
v/s Ratio Prot		c0.47								0.36	c0.84	
v/s Ratio Perm												
v/c Ratio		1.34								0.61	1.42	
Uniform Delay, d1		46.0								18.5	29.0	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		164.4								0.9	192.3	
Delay (s)		210.4								19.4	221.3	
Level of Service		F								B	F	
Approach Delay (s)		210.4			0.0			0.0			162.5	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	175.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.5%	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)	260	705	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	783	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	990	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	59.5%	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	122	33	392	462	0	0	0	0	339	1740	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	2047	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	2047	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	c1.00	
v/s Ratio Perm												
v/c Ratio		1.04		1.79	1.10					0.35	1.71	
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	322.5	
Delay (s)		128.0		423.6	110.1					15.6	352.0	
Level of Service		F		F	F					B	F	
Approach Delay (s)		128.0			254.0			0.0			297.1	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	270.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.7%	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)	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	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	597	1390	990	60	59	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3860		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3860		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	649	1511	1076	65	64	660
RTOR Reduction (vph)	0	0	5	0	0	517
Lane Group Flow (vph)	649	1511	1136	0	64	143
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	30.0	61.4	27.4		11.6	11.6
Effective Green, g (s)	30.0	61.4	27.4		11.6	11.6
Actuated g/C Ratio	0.37	0.76	0.34		0.14	0.14
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)	721	2951	1306		279	249
v/s Ratio Prot	c0.33	0.39	c0.29		0.03	
v/s Ratio Perm						c0.08
v/c Ratio	0.90	0.51	0.87		0.23	0.58
Uniform Delay, d1	24.1	3.9	25.1		30.7	32.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.3	0.2	6.6		0.4	3.2
Delay (s)	38.4	4.0	31.7		31.2	35.6
Level of Service	D	A	C		C	D
Approach Delay (s)		14.4	31.7		35.2	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
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)	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)				932		
pX, platoon unblocked					0.56	
vC, conflicting volume			1960		3698	980
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1960		4254	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		0	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)	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)					578							
pX, platoon unblocked	0.56						0.56	0.56		0.56	0.56	0.56
vC, conflicting volume	2592			1683			3031	4295	841	3454	4293	1296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2272			1683			3055	5312	841	3810	5310	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 %	92			100			0	0	0	0	100	94
cM capacity (veh/h)	124			376			3	0	308	0	0	607

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	124	1700	1700	1700	4	0
Volume to Capacity	0.08	0.66	1.02	0.51	172.36	Err
Queue Length 95th (ft)	6	0	0	0	Err	Err
Control Delay (s)	4.9	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	1.6		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		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	298	1326	1661	327	368	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.98		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3507	3452		1770	1583
Flt Permitted		0.49	1.00		0.95	1.00
Satd. Flow (perm)		1737	3452		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	1441	1805	355	400	346
RTOR Reduction (vph)	0	0	13	0	0	34
Lane Group Flow (vph)	0	1765	2147	0	400	312
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		97.0	97.0		25.0	25.0
Effective Green, g (s)		97.0	97.0		25.0	25.0
Actuated g/C Ratio		0.75	0.75		0.19	0.19
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)		1296	2576		340	304
v/s Ratio Prot			0.62		c0.23	
v/s Ratio Perm		c1.02				0.20
v/c Ratio		5.68dl	0.83		1.18	1.03
Uniform Delay, d1		16.5	11.1		52.5	52.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		167.9	2.5		105.9	58.6
Delay (s)		184.4	13.5		158.4	111.1
Level of Service		F	B		F	F
Approach Delay (s)		184.4	13.5		136.5	
Approach LOS		F	B		F	

Intersection Summary

HCM Average Control Delay	97.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	132.0%	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	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	715	614	587	481	0	0	0	0	897	0	553
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						1714	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3294		1770	3539						1714	
Peak-hour factor, PHF	0.92	0.92	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	523	0	0	0	0	975	0	601
RTOR Reduction (vph)	0	111	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	1333	0	638	523	0	0	0	0	0	1560	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						808	
v/s Ratio Prot		c0.40		c0.36	0.15							
v/s Ratio Perm											0.91	
v/c Ratio		1.67		1.80	0.31						1.93	
Uniform Delay, d1		53.0		56.0	22.9						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		305.6		372.1	0.1						423.5	
Delay (s)		358.6		428.1	23.1						460.5	
Level of Service		F		F	C						F	
Approach Delay (s)		358.6			245.6			0.0			460.5	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	365.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	219.9%	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	540	0	0	736	627	986	0	855	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	587	0	0	800	682	1072	0	929	0	0
RTOR Reduction (vph)	0	0	0	0	103	0	0	0	180	0	0
Lane Group Flow (vph)	836	587	0	0	1379	0	0	1072	749	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	0.17			c0.42						
v/s Ratio Perm								0.61	0.47		
v/c Ratio	1.69	0.29			1.57			1.62	1.27		
Uniform Delay, d1	54.0	16.4			55.0			47.0	47.0		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	317.1	0.1			261.7			286.7	133.0		
Delay (s)	371.1	16.4			316.7			333.7	180.0		
Level of Service	F	B			F			F	F		
Approach Delay (s)		224.8			316.7			262.4		0.0	
Approach LOS		F			F			F		A	

Intersection Summary

HCM Average Control Delay	267.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	219.9%	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)	45	1342	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	1459	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				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	1380			1460			2271	2946	730	2197	2918	690
vC1, stage 1 conf vol							1557	1557		1360	1360	
vC2, stage 2 conf vol							714	1389		837	1558	
vCu, unblocked vol	1380			1328			2208	2942	536	2129	2911	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			95	100	98	56	100	89
cM capacity (veh/h)	492			475			106	108	450	137	122	387

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	49	972	487	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	475	1700	1700	208	137	387
Volume to Capacity	0.10	0.57	0.29	0.01	0.52	0.29	0.07	0.44	0.11
Queue Length 95th (ft)	8	0	0	1	0	0	6	50	9
Control Delay (s)	13.1	0.0	0.0	12.6	0.0	0.0	23.7	50.7	15.5
Lane LOS	B			B			C	F	C
Approach Delay (s)	0.4			0.0			23.7	36.0	
Approach LOS							C	E	

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	729	400	416	2028	0	304	7	284	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	2204	0	330	8	309	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	2204			1227			3522	4336	1102	3020	4118	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2204			1227			3522	4336	1102	3020	4118	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)	235			564			1	0	206	0	0	435

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	528	699	1187	1470	647	36
Volume Left	0	0	452	0	330	18
Volume Right	0	435	0	0	309	17
cSH	1700	1700	564	1700	1	0
Volume to Capacity	0.31	0.41	0.80	0.86	478.09	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		14.5		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	152.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	445	593	0	0	1078	766	1359	0	828	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	645	0	0	1172	833	1477	0	900	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			645			2198	3616	322	2878	3200
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	2004			645			2198	3616	322	2878	3200
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	0	0	0
cM capacity (veh/h)	282			936			0	0	673	0	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	699	430	781	1223	1477	900
Volume Left	484	0	0	0	1477	0
Volume Right	0	0	0	833	0	900
cSH	282	1700	1700	1700	0	673
Volume to Capacity	1.72	0.25	0.46	0.72	Err	1.34
Queue Length 95th (ft)	777	0	0	0	Err	934
Control Delay (s)	368.2	0.0	0.0	0.0	Err	180.6
Lane LOS	F				F	F
Approach Delay (s)	228.0		0.0		Err	
Approach LOS					F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	169.0%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	980	784	24	1108	70	1508	139	17	51	108	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			0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1846			1780			1674	
Flt Permitted	0.24	1.00	1.00	0.24	1.00			0.36			0.99	
Satd. Flow (perm)	438	1863	1583	438	1846			665			1670	
Peak-hour factor, PHF	0.92	0.92	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	151	18	55	117	449
RTOR Reduction (vph)	0	0	486	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	315	1065	366	26	1275	0	0	1807	0	0	613	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			296			742	
v/s Ratio Prot		0.57			0.69							
v/s Ratio Perm	c0.72		0.23	0.06				c2.72			0.37	
v/c Ratio	1.91	1.51	0.61	0.16	1.83			6.11			0.83	
Uniform Delay, d1	14.0	14.0	11.3	9.3	14.0			12.5			11.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	430.8	238.1	1.9	0.4	378.8			2305.1			7.5	
Delay (s)	444.8	252.1	13.2	9.7	392.8			2317.6			18.5	
Level of Service	F	F	B	A	F			F			B	
Approach Delay (s)		188.1			385.2			2317.6			18.5	
Approach LOS		F			F			F			B	

Intersection Summary

HCM Average Control Delay	858.8	HCM Level of Service	F
HCM Volume to Capacity ratio	4.18		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	217.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

No-Build Plus Project Underpass Synchro Outputs

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

4/10/2012

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
2: Van Ness Ave & San Benito St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	268	0	0	196	47	480	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	291	0	0	213	51	522	122	98	0	0	0

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	118	194	142	122	583	159
Volume Left (vph)	21	0	0	0	522	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	0.23	0.38	0.28	0.23	1.09	0.26
Capacity (veh/h)	492	501	493	513	529	602
Control Delay (s)	11.1	13.1	11.7	10.7	88.1	9.6
Approach Delay (s)	12.4		11.3		71.3	
Approach LOS	B		B		F	

Intersection Summary			
Delay	45.3		
HCM Level of Service	E		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

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)		1131				
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
4: Van Ness Ave & 41 SB Off-Ramp

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	272	335	102	469	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	296	364	111	510	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				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	510			660			1200	1209	478	1209	1391	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510			607			1181	1191	413	1191	1384	255
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	16
cM capacity (veh/h)	1052			910			0	154	553	122	118	744

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	660	281	340	884	417
Volume Left	0	111	0	185	0
Volume Right	364	0	0	208	417
cSH	1700	910	1700	148	744
Volume to Capacity	0.39	0.12	0.20	5.98	0.56
Queue Length 95th (ft)	0	10	0	Err	88
Control Delay (s)	0.0	4.5	0.0	Err	15.8
Lane LOS		A		F	C
Approach Delay (s)	0.0	2.0		6801.9	
Approach LOS				F	

Intersection Summary				
Average Delay	3428.7			
Intersection Capacity Utilization	105.6%	ICU Level of Service	G	
Analysis Period (min)	15			

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	316	0	317	0	0	0	0	997	223	226	555	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		322	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	1084	242	246	603	0
RTOR Reduction (vph)	0	282	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	343	63	0	0	0	0	0	1310	0	246	603	0
Turn Type	Split									Perm		
Protected Phases	4	4						2			2	
Permitted Phases										2		
Actuated Green, G (s)	21.8	21.8						88.8		88.8	88.8	
Effective Green, g (s)	21.8	21.8						88.8		88.8	88.8	
Actuated g/C Ratio	0.18	0.18						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)	322	288						2547		238	2619	
v/s Ratio Prot	c0.19	0.04						0.38			0.17	
v/s Ratio Perm										c0.76		
v/c Ratio	1.07	0.22						0.51		1.03	0.23	
Uniform Delay, d1	49.1	41.8						6.5		15.6	4.9	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	68.5	0.9						0.1		67.4	0.0	
Delay (s)	117.6	42.7						6.6		83.0	4.9	
Level of Service	F	D						A		F	A	
Approach Delay (s)		80.0			0.0			6.6			27.5	
Approach LOS		F			A			A			C	

Intersection Summary

HCM Average Control Delay	30.5	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	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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	931	0	0	676	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	1012	0	0	735	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	2672	2702	484	2218	2818	506	967			1012		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2672	2702	484	2218	2818	506	967			1012		
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	9	41			100		
cM capacity (veh/h)	0	9	529	13	7	512	708			681		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	138	476	420	506	506	490	478
Volume Left	125	0	420	0	0	0	0
Volume Right	0	463	0	0	0	0	233
cSH	12	175	708	1700	1700	1700	1700
Volume to Capacity	11.67	2.73	0.59	0.30	0.30	0.29	0.28
Queue Length 95th (ft)	Err	1048	98	0	0	0	0
Control Delay (s)	Err	833.3	17.2	0.0	0.0	0.0	0.0
Lane LOS	F	F	C				
Approach Delay (s)	2893.6		5.0			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	592.2		
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

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

4/10/2012

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	1156	3	1	814	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	1257	3	1	885	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	1969	2576	459	2159	2591	630	917			1260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1932	2561	368	2129	2576	630	843			1260		
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	76	93	0	0	97	73			100		
cM capacity (veh/h)	0	18	607	16	18	424	761			548		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	68	88	835	632	443	475
Volume Left	23	53	207	0	1	0
Volume Right	41	14	0	3	0	33
cSH	0	20	761	1700	548	1700
Volume to Capacity	Err	4.43	0.27	0.37	0.00	0.28
Queue Length 95th (ft)	Err	Err	27	0	0	0
Control Delay (s)	Err	Err	6.6	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	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	255	501	68	336	553	30	72	638	388	60	461	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)	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	0.98		1.00	0.99		1.00	0.94		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	3476		1770	1848		1770	3338		1770	3389	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3476		1770	1848		1770	3338		1770	3389	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	545	74	365	601	33	78	693	422	65	501	198
RTOR Reduction (vph)	0	7	0	0	1	0	0	64	0	0	29	0
Lane Group Flow (vph)	277	612	0	365	633	0	78	1051	0	65	670	0
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	23.9	23.9		45.6	45.6		8.0	46.4		6.2	44.6	
Effective Green, g (s)	23.9	23.9		45.6	45.6		8.0	46.4		6.2	44.6	
Actuated g/C Ratio	0.17	0.17		0.32	0.32		0.06	0.33		0.04	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)	299	587		570	596		100	1095		78	1068	
v/s Ratio Prot	0.16	c0.18		0.21	c0.34		c0.04	c0.31		0.04	0.20	
v/s Ratio Perm												
v/c Ratio	0.93	1.04		0.64	1.06		0.78	0.96		0.83	0.63	
Uniform Delay, d1	57.9	58.8		40.9	48.0		65.9	46.6		67.1	41.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	32.7	48.5		1.8	54.3		29.5	18.0		48.6	0.8	
Delay (s)	90.6	107.3		42.8	102.2		95.4	64.6		115.7	42.2	
Level of Service	F	F		D	F		F	E		F	D	
Approach Delay (s)		102.1			80.5			66.6			48.4	
Approach LOS		F			F			E			D	

Intersection Summary

HCM Average Control Delay	74.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	15.2
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	35	216	56	254	522	194	61	706	159	189	543	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	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	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3430		1770	3395		1770	3442		1770	3449	
Flt Permitted	0.20	1.00		0.57	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	369	3430		1061	3395		1770	3442		1770	3449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	235	61	276	567	211	66	767	173	205	590	121
RTOR Reduction (vph)	0	36	0	0	60	0	0	29	0	0	24	0
Lane Group Flow (vph)	38	260	0	276	718	0	66	911	0	205	687	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	20.2	20.2		20.2	20.2		5.0	23.7		8.8	27.5	
Effective Green, g (s)	20.2	20.2		20.2	20.2		5.0	23.7		8.8	27.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.08	0.36		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)	114	1064		329	1053		136	1253		239	1457	
v/s Ratio Prot		0.08			0.21		0.04	c0.26		c0.12	0.20	
v/s Ratio Perm	0.10			c0.26								
v/c Ratio	0.33	0.24		0.84	0.68		0.49	0.73		0.86	0.47	
Uniform Delay, d1	17.3	16.8		20.9	19.6		28.8	17.9		27.5	13.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	0.2		18.4	2.3		1.0	2.5		24.1	0.5	
Delay (s)	20.6	17.0		39.3	21.9		29.8	20.4		51.6	14.0	
Level of Service	C	B		D	C		C	C		D	B	
Approach Delay (s)		17.4			26.5			21.1			22.4	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	12.4
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	39	440	151	0	0	0	0	836	98	24	773	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)		5065	1583					3483		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.20	1.00	
Satd. Flow (perm)		5065	1583					3483		365	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)	42	478	164	0	0	0	0	909	107	26	840	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	520	96	0	0	0	0	1001	0	26	840	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		173	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					0.61		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	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	79	43	37	156	324	17	85	727	5	25	701	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	170	352	18	92	790	5	27	762	40
RTOR Reduction (vph)	0	0	35	0	0	13	0	0	3	0	0	28
Lane Group Flow (vph)	86	47	5	170	352	5	92	790	2	27	762	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	5.8	24.9	24.9	2.8	21.9	21.9
Effective Green, g (s)	8.5	8.5	8.5	18.6	18.6	18.6	5.8	24.9	24.9	2.8	21.9	21.9
Actuated g/C Ratio	0.12	0.12	0.12	0.26	0.26	0.26	0.08	0.35	0.35	0.04	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)	211	222	188	894	485	412	144	1234	552	69	1085	486
v/s Ratio Prot	c0.05	0.03		0.05	c0.19		c0.05	c0.22		0.02	0.22	
v/s Ratio Perm			0.00			0.00			0.00			0.01
v/c Ratio	0.41	0.21	0.03	0.19	0.73	0.01	0.64	0.64	0.00	0.39	0.70	0.03
Uniform Delay, d1	29.1	28.4	27.8	20.5	24.1	19.6	31.8	19.5	15.2	33.5	21.9	17.3
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	2.6	1.0	0.1	0.2	6.4	0.0	6.7	1.5	0.0	1.3	2.6	0.0
Delay (s)	31.7	29.4	27.9	20.7	30.5	19.6	38.5	21.0	15.2	34.8	24.4	17.3
Level of Service	C	C	C	C	C	B	D	C	B	C	C	B
Approach Delay (s)		30.2			27.1			22.8			24.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (vph)	35	104	112	0	0	162	658	0	0	745	411
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			0.34	1.00			1.00	1.00
Satd. Flow (perm)		3433	1583			637	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)	38	113	122	0	0	176	715	0	0	810	447
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	151	19	0	0	176	715	0	0	810	276
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			23.2	23.2			23.2	23.2
Effective Green, g (s)		6.0	6.0			23.2	23.2			23.2	23.2
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)		548	253			393	2184			2184	977
v/s Ratio Prot		c0.04					0.20			0.23	
v/s Ratio Perm			0.01			c0.28					0.17
v/c Ratio		0.28	0.08			0.45	0.33			0.37	0.28
Uniform Delay, d1		13.9	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)		14.0	13.5			4.1	3.5			3.6	3.4
Level of Service		B	B			A	A			A	A
Approach Delay (s)		13.8		0.0			3.6			3.5	
Approach LOS		B		A			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)	37.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	600	7	12	1088	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	652	8	13	1183	166	15	154	5	199	139	284
RTOR Reduction (vph)	0	1	0	0	0	65	0	4	0	0	0	203
Lane Group Flow (vph)	135	659	0	13	1183	101	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	0.60		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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 Signalized Intersection Capacity Analysis
16: H St & Inyo St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	650	102	0	0	176	161	0	27	0	7	63	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	1.00
Satd. Flow (prot)	1770	3539			3539	1583		2049			2038	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.98	1.00
Satd. Flow (perm)	1770	3539			3539	1583		2049			2005	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)	707	111	0	0	191	175	0	29	0	8	68	292
RTOR Reduction (vph)	0	0	0	0	0	145	0	0	0	0	0	230
Lane Group Flow (vph)	707	111	0	0	191	30	0	29	0	0	76	62
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4		3	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	29.2	44.6			11.4	11.4		14.2			14.4	14.2
Effective Green, g (s)	29.2	44.6			11.4	11.4		14.2			14.4	14.2
Actuated g/C Ratio	0.43	0.66			0.17	0.17		0.21			0.21	0.21
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	769	2349			600	269		433			430	335
v/s Ratio Prot	c0.40	0.03			c0.05			0.01				
v/s Ratio Perm						0.02					0.04	c0.04
v/c Ratio	0.92	0.05			0.32	0.11		0.07			0.18	0.18
Uniform Delay, d1	17.9	3.9			24.5	23.6		21.2			21.6	21.7
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	15.9	0.0			0.6	0.4		0.0			0.2	0.1
Delay (s)	33.8	3.9			25.1	24.0		21.2			21.8	21.8
Level of Service	C	A			C	C		C			C	C
Approach Delay (s)		29.7			24.6			21.2			21.8	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	12.4
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	222	78	205	455	54	111	205	105	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	0.96		1.00	0.98		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	3401		1770	3483		1770	1768		1770	1828	
Flt Permitted	0.42	1.00		0.55	1.00		0.67	1.00		0.46	1.00	
Satd. Flow (perm)	775	3401		1033	3483		1246	1768		863	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	85	223	495	59	121	223	114	14	121	17
RTOR Reduction (vph)	0	46	0	0	16	0	0	30	0	0	9	0
Lane Group Flow (vph)	5	280	0	223	538	0	121	307	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	1568		476	1606		486	690		337	713	
v/s Ratio Prot		0.08			0.15			c0.17			0.07	
v/s Ratio Perm	0.01			c0.22			0.10			0.02		
v/c Ratio	0.01	0.18		0.47	0.34		0.25	0.45		0.04	0.18	
Uniform Delay, d1	8.2	8.9		10.4	9.7		11.6	12.7		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		0.3	0.0		0.1	0.2		0.0	0.0	
Delay (s)	8.3	8.9		10.7	9.7		11.7	12.9		10.7	11.3	
Level of Service	A	A		B	A		B	B		B	B	
Approach Delay (s)		8.9			10.0			12.6			11.3	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
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
18: M St & Inyo St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	36	461	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	501	82	0	0	0	0	66	77	64	221	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	590	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 Unsignalized Intersection Capacity Analysis
19: P St & Inyo St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	127	449	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	488	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	507			0			538	783	0	778	773	253
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507			0			538	783	0	778	773	253
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)	1054			1622			374	296	1084	261	300	746

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	382	262	15	10	28
Volume Left	138	0	15	0	0
Volume Right	0	18	0	0	8
cSH	1622	1700	374	296	358
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	17.6	15.9
Lane LOS	A		C	C	C
Approach Delay (s)	1.9		16.0		15.9
Approach LOS			C		C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	76	9	66	103	2	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.98			1.00	0.87	
Flt Protected	1.00			0.98	1.00	
Satd. Flow (prot)	3482			3471	1618	
Flt Permitted	1.00			0.95	1.00	
Satd. Flow (perm)	3482			3380	1618	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	10	72	112	2	49
RTOR Reduction (vph)	9	0	0	0	47	0
Lane Group Flow (vph)	85	0	0	184	4	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	1.8			1.8	0.6	
Effective Green, g (s)	1.8			1.8	0.6	
Actuated g/C Ratio	0.15			0.15	0.05	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	522			507	81	
v/s Ratio Prot	0.02					
v/s Ratio Perm				c0.05	c0.00	
v/c Ratio	0.16			0.36	0.05	
Uniform Delay, d1	4.4			4.6	5.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.2	0.1	
Delay (s)	4.5			4.7	5.5	
Level of Service	A			A	A	
Approach Delay (s)	4.5			4.7	5.5	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	12.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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						
vC, conflicting volume			708		1239	354
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			708		1239	354
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			71		72	92
cM capacity (veh/h)			887		118	643

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	887	1700	233
Volume to Capacity	0.19	0.22	0.29	0.09	0.36
Queue Length 95th (ft)	0	0	31	0	40
Control Delay (s)	0.0	0.0	9.0	0.0	29.1
Lane LOS			A		D
Approach Delay (s)	0.0		6.1		29.1
Approach LOS					D

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	285	58	56	4	199	9	146	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)		1764			1850		1770	1861		1770	1733	
Flt Permitted		0.63			0.99		0.68	1.00		0.31	1.00	
Satd. Flow (perm)		1155			1840		1263	1861		584	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	61	4	216	10	159	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	425	0	0	228	0	159	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)		26.0			26.0		31.2	31.2		31.2	31.2	
Effective Green, g (s)		26.0			26.0		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)		458			729		601	885		278	824	
v/s Ratio Prot								c0.29			0.05	
v/s Ratio Perm		c0.37			0.12		0.13			0.01		
v/c Ratio		0.93			0.31		0.26	0.60		0.01	0.11	
Uniform Delay, d1		18.9			13.6		10.3	12.6		9.1	9.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		24.6			0.1		0.1	0.8		0.0	0.0	
Delay (s)		43.5			13.7		10.4	13.4		9.1	9.6	
Level of Service		D			B		B	B		A	A	
Approach Delay (s)		43.5			13.7			12.7			9.5	
Approach LOS		D			B			B			A	

Intersection Summary

HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	65.6	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
23: F st & Tulare St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	112	86	10	9	28	137	68	608	102	86	70	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.89		1.00	0.98		1.00	0.90	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1802			1660		1770	1823		1770	1685	
Flt Permitted		0.74			0.98		0.63	1.00		0.20	1.00	
Satd. Flow (perm)		1377			1635		1168	1823		364	1685	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	93	11	10	30	149	74	661	111	93	76	133
RTOR Reduction (vph)	0	3	0	0	104	0	0	10	0	0	59	0
Lane Group Flow (vph)	0	223	0	0	85	0	74	762	0	93	150	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		18.1			18.1		33.0	33.0		33.0	33.0	
Effective Green, g (s)		18.1			18.1		33.0	33.0		33.0	33.0	
Actuated g/C Ratio		0.30			0.30		0.55	0.55		0.55	0.55	
Clearance Time (s)		4.2			4.2		4.2	4.2		4.2	4.2	
Vehicle Extension (s)		0.2			0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		419			497		648	1011		202	935	
v/s Ratio Prot								c0.42			0.09	
v/s Ratio Perm		c0.16			0.05		0.06			0.26		
v/c Ratio		0.53			0.17		0.11	0.75		0.46	0.16	
Uniform Delay, d1		17.2			15.2		6.3	10.1		7.9	6.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.1		0.0	2.9		0.6	0.0	
Delay (s)		17.8			15.3		6.3	13.0		8.5	6.5	
Level of Service		B			B		A	B		A	A	
Approach Delay (s)		17.8			15.3			12.4			7.1	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	8.4
Intersection Capacity Utilization	109.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	243	524	43	105	292	123	121	663	153	161	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	3499		1770	3381		1770	3440		1770	3390	
Flt Permitted	0.48	1.00		0.37	1.00		0.57	1.00		0.23	1.00	
Satd. Flow (perm)	892	3499		685	3381		1068	3440		422	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	570	47	114	317	134	132	721	166	175	210	82
RTOR Reduction (vph)	0	10	0	0	64	0	0	32	0	0	47	0
Lane Group Flow (vph)	264	607	0	114	387	0	132	855	0	175	245	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	24.2	24.2		24.2	24.2		25.0	25.0		25.0	25.0	
Effective Green, g (s)	24.2	24.2		24.2	24.2		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.43	0.43		0.43	0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.2	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)	373	1462		286	1413		461	1485		182	1464	
v/s Ratio Prot		0.17			0.11			0.25			0.07	
v/s Ratio Perm	c0.30			0.17			0.12			c0.41		
v/c Ratio	0.71	0.41		0.40	0.27		0.29	0.58		0.96	0.17	
Uniform Delay, d1	13.9	11.9		11.8	11.1		10.7	12.4		16.0	10.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	0.1		0.3	0.0		0.1	0.3		55.0	0.0	
Delay (s)	18.9	11.9		12.1	11.1		10.8	12.8		70.9	10.1	
Level of Service	B	B		B	B		B	B		E	B	
Approach Delay (s)		14.0			11.3			12.5			32.9	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	57.9	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
26: Van Ness Ave & Tulare St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	210	140	136	385	60	142	529	160	90	273	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	0.94		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	1751		1770	3468		1770	3416		1770	3346	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1751		1770	3468		1770	3416		1770	3346	
Peak-hour factor, PHF	0.92	0.92	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	152	148	418	65	154	575	174	98	297	170
RTOR Reduction (vph)	0	32	0	0	15	0	0	37	0	0	110	0
Lane Group Flow (vph)	92	348	0	148	468	0	154	712	0	98	357	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	19.1		8.4	21.3		7.9	22.0		5.8	19.9	
Effective Green, g (s)	6.2	19.1		8.4	21.3		7.9	22.0		5.8	19.9	
Actuated g/C Ratio	0.09	0.27		0.12	0.30		0.11	0.31		0.08	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)	153	466		207	1030		195	1048		143	929	
v/s Ratio Prot	0.05	c0.20		c0.08	0.13		c0.09	c0.21		0.06	0.11	
v/s Ratio Perm												
v/c Ratio	0.60	0.75		0.71	0.45		0.79	0.68		0.69	0.38	
Uniform Delay, d1	31.6	24.1		30.5	20.5		31.1	21.8		32.1	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	7.7		9.4	0.7		17.5	2.3		10.3	0.6	
Delay (s)	36.1	31.8		39.8	21.1		48.6	24.1		42.4	21.5	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		32.6			25.5			28.3			25.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.2
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	167	374	180	0	0	0	0	514	156	176	627	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5	4.5					4.5		4.5	4.5	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.98	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5008	1583					3415		1770	3539	
Flt Permitted		0.98	1.00					1.00		0.33	1.00	
Satd. Flow (perm)		5008	1583					3415		618	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	559	170	191	682	0
RTOR Reduction (vph)	0	0	128	0	0	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	589	68	0	0	0	0	678	0	191	682	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					1680		304	1741	
v/s Ratio Prot		c0.12						0.20			0.19	
v/s Ratio Perm			0.04							c0.31		
v/c Ratio		0.34	0.12					0.40		0.63	0.39	
Uniform Delay, d1		13.4	12.4					8.9		10.3	8.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0					0.1		2.9	0.1	
Delay (s)		13.4	12.4					8.9		13.2	8.9	
Level of Service		B	B					A		B	A	
Approach Delay (s)		13.2			0.0			8.9			9.8	
Approach LOS		B			A			A			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
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
28: P St & Tulare St

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	119	306	43	128	352	0	0	1032	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)				4.2	4.2	4.2	4.2	4.2			4.2	4.2
Lane Util. Factor				1.00	1.00	1.00	1.00	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1863	1583	1770	3539			3539	1583
Flt Permitted				0.95	1.00	1.00	0.19	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	357	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	129	333	47	139	383	0	0	1122	112
RTOR Reduction (vph)	0	0	0	0	0	23	0	0	0	0	0	43
Lane Group Flow (vph)	0	0	0	129	333	24	139	383	0	0	1122	69
Turn Type				Split		Perm	Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases						6	8					4
Actuated Green, G (s)				15.7	15.7	15.7	30.8	30.8			30.8	30.8
Effective Green, g (s)				15.7	15.7	15.7	30.8	30.8			30.8	30.8
Actuated g/C Ratio				0.29	0.29	0.29	0.56	0.56			0.56	0.56
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)				506	533	453	200	1985			1985	888
v/s Ratio Prot				0.07	c0.18			0.11			0.32	
v/s Ratio Perm						0.02	c0.39					0.04
v/c Ratio				0.25	0.62	0.05	0.69	0.19			0.57	0.08
Uniform Delay, d1				15.1	17.0	14.2	8.7	5.9			7.7	5.5
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.3	2.3	0.0	12.6	0.1			0.6	0.1
Delay (s)				15.4	19.3	14.3	21.2	6.0			8.4	5.6
Level of Service				B	B	B	C	A			A	A
Approach Delay (s)		0.0			17.9			10.1			8.1	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	37	156	44	118	210	81	47	298	26	90	1054	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.2	4.2		4.2	4.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3497		1770	3490	
Flt Permitted	0.58	1.00	1.00	0.65	1.00	1.00	0.13	1.00		0.54	1.00	
Satd. Flow (perm)	1083	1863	1583	1210	1863	1583	247	3497		1008	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)	40	170	48	128	228	88	51	324	28	98	1146	116
RTOR Reduction (vph)	0	0	32	0	0	59	0	11	0	0	13	0
Lane Group Flow (vph)	40	170	16	128	228	29	51	341	0	98	1249	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	30.3	30.3		30.3	30.3	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0	19.0	30.3	30.3		30.3	30.3	
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)	354	609	518	396	609	518	129	1824		526	1820	
v/s Ratio Prot		0.09			c0.12			0.10			c0.36	
v/s Ratio Perm	0.04		0.01	0.11		0.02	0.21			0.10		
v/c Ratio	0.11	0.28	0.03	0.32	0.37	0.06	0.40	0.19		0.19	0.69	
Uniform Delay, d1	13.7	14.5	13.3	14.7	15.0	13.4	8.4	7.4		7.4	10.4	
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	0.1	0.0	0.2	0.1	0.0	0.7	0.0		0.1	0.9	
Delay (s)	13.7	14.6	13.3	14.9	15.1	13.4	9.1	7.4		7.4	11.2	
Level of Service	B	B	B	B	B	B	A	A		A	B	
Approach Delay (s)		14.2			14.7			7.6			11.0	
Approach LOS		B			B			A			B	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	39	205	38	0	0	0	21	307	74	307	1217	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.6	4.6				4.6	4.6		4.6	4.6	
Lane Util. Factor		1.00	1.00				1.00	0.95		1.00	0.95	
Frt		1.00	0.85				1.00	0.97		1.00	0.98	
Flt Protected		0.99	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1848	1583				1770	3437		1770	3478	
Flt Permitted		0.99	1.00				0.13	1.00		0.51	1.00	
Satd. Flow (perm)		1848	1583				234	3437		949	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)	42	223	41	0	0	0	23	334	80	334	1323	174
RTOR Reduction (vph)	0	0	17	0	0	0	0	21	0	0	10	0
Lane Group Flow (vph)	0	265	24	0	0	0	23	393	0	334	1487	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				31.9	31.9		31.9	31.9	
Effective Green, g (s)		10.5	10.5				31.9	31.9		31.9	31.9	
Actuated g/C Ratio		0.20	0.20				0.62	0.62		0.62	0.62	
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)		376	322				145	2125		587	2150	
v/s Ratio Prot		c0.14						0.11			c0.43	
v/s Ratio Perm			0.02				0.10			0.35		
v/c Ratio		0.70	0.08				0.16	0.18		0.57	0.69	
Uniform Delay, d1		19.1	16.6				4.2	4.2		5.8	6.6	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.9	0.0				0.7	0.1		1.6	1.1	
Delay (s)		24.0	16.7				4.9	4.3		7.4	7.6	
Level of Service		C	B				A	A		A	A	
Approach Delay (s)		23.0			0.0			4.3			7.6	
Approach LOS		C			A			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)	51.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	903	0	337	623	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	982	0	366	677	0
RTOR Reduction (vph)	0	541	0	0	0	0
Lane Group Flow (vph)	0	441	0	366	677	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		15.4		10.7	14.9	
Effective Green, g (s)		15.4		10.7	14.9	
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)		1251		1104	1537	
v/s Ratio Prot				c0.10	c0.19	
v/s Ratio Perm		0.16				
v/c Ratio		0.35		0.33	0.44	
Uniform Delay, d1		6.2		9.1	6.8	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.3	
Delay (s)		6.2		9.2	7.1	
Level of Service		A		A	A	
Approach Delay (s)	6.2			9.2	7.1	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	34.3	Sum of lost time (s)	8.7
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	603	9	0	530	0	0	0	0	434	920	819
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.95			0.95					0.91	0.91	1.00
Frt		1.00			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3531			3539					1610	3383	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3531			3539					1610	3383	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	655	10	0	576	0	0	0	0	472	1000	890
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	664	0	0	576	0	0	0	0	425	1047	866
Turn Type										Perm		Perm
Protected Phases		4			8						2	
Permitted Phases										2		2
Actuated Green, G (s)		14.9			14.9					35.9	35.9	35.9
Effective Green, g (s)		14.9			14.9					35.9	35.9	35.9
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)		895			897					983	2065	966
v/s Ratio Prot		c0.19			0.16							
v/s Ratio Perm										0.26	0.31	c0.55
v/c Ratio		0.74			0.64					0.43	0.51	0.90
Uniform Delay, d1		20.2			19.6					6.1	6.5	9.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		3.3			1.6					0.3	0.2	10.8
Delay (s)		23.5			21.2					6.4	6.7	20.7
Level of Service		C			C					A	A	C
Approach Delay (s)		23.5			21.2			0.0			11.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	133	248	0	413	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)	145	270	0	449	230	514
RTOR Reduction (vph)	0	174	0	0	0	254
Lane Group Flow (vph)	145	96	0	449	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	29.7	29.7
Effective Green, g (s)	20.8	20.8		20.8	29.7	29.7
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)	1254	561		1254	896	801
v/s Ratio Prot	0.04			c0.13	0.13	
v/s Ratio Perm		0.06				c0.16
v/c Ratio	0.12	0.17		0.36	0.26	0.32
Uniform Delay, d1	12.8	13.0		14.0	8.2	8.6
Progression Factor	1.00	1.00		0.61	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.1	0.1	0.1
Delay (s)	12.8	13.2		8.8	8.3	8.7
Level of Service	B	B		A	A	A
Approach Delay (s)	13.0			8.8	8.5	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	58.7	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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	394	533	501	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)	428	579	545	577	0	0
RTOR Reduction (vph)	0	0	0	403	0	0
Lane Group Flow (vph)	428	579	545	174	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	8.3	29.7	17.7	17.7		
Effective Green, g (s)	8.3	29.7	17.7	17.7		
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)	534	1970	1174	525		
v/s Ratio Prot	c0.11	0.15	c0.14			
v/s Ratio Perm				0.10		
v/c Ratio	0.80	0.29	0.46	0.33		
Uniform Delay, d1	24.4	8.4	16.6	15.9		
Progression Factor	1.00	1.00	1.15	2.37		
Incremental Delay, d2	10.9	0.0	0.4	0.5		
Delay (s)	35.3	8.4	19.6	38.2		
Level of Service	D	A	B	D		
Approach Delay (s)		19.9	29.2		0.0	
Approach LOS		B	C		A	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	32.7
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	347	596	88	93	712	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	3440		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	3440		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	648	96	101	774	178	422	298	29	299	446	305
RTOR Reduction (vph)	0	0	46	0	20	0	0	0	22	0	0	156
Lane Group Flow (vph)	377	648	50	101	932	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	33.3	33.3	5.7	29.7		10.0	21.4	21.4	11.6	22.7	22.7
Effective Green, g (s)	9.0	33.3	33.3	5.7	29.7		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)	346	1321	591	219	1145		385	849	380	446	901	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	0.81		1.10	0.35	0.02	0.67	0.50	0.37
Uniform Delay, d1	40.1	21.4	18.1	40.3	27.2		39.6	28.1	25.9	37.0	28.4	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	74.5	0.6	0.1	0.6	5.2		74.3	0.5	0.0	3.1	1.0	1.3
Delay (s)	114.6	22.0	18.2	40.8	32.4		113.9	28.7	25.9	40.1	29.3	28.7
Level of Service	F	C	B	D	C		F	C	C	D	C	C
Approach Delay (s)		52.9			33.2			76.6			32.2	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	17.5
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	42	1069	122	68	229	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	5007			3338			1838			1686	
Flt Permitted	0.47	1.00			0.68			0.97			0.91	
Satd. Flow (perm)	874	5007			2304			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	1162	133	74	249	160	9	115	10	90	70	278
RTOR Reduction (vph)	0	24	0	0	81	0	0	5	0	0	103	0
Lane Group Flow (vph)	46	1271	0	0	402	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)	430	2461			1132			635			549	
v/s Ratio Prot		c0.25										
v/s Ratio Perm	0.05				0.17			0.07			c0.22	
v/c Ratio	0.11	0.52			0.35			0.20			0.61	
Uniform Delay, d1	8.1	10.2			9.2			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	10.3			9.3			13.3			17.0	
Level of Service	A	B			A			B			B	
Approach Delay (s)		10.2			9.3			13.3			17.0	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
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
36: C Street & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	128	21	49	40	25	39	83	1210	31	93	910	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		273	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	1315	34	101	989	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	1348	0	101	1117	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	4.1	6.4		48.3	48.3		48.3	48.3	
Effective Green, g (s)	8.1	10.4	10.4	4.1	6.4		48.3	48.3		48.3	48.3	
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)	191	258	219	97	144		246	2265		175	2231	
v/s Ratio Prot	c0.08	c0.01		0.02	c0.02			c0.38			0.32	
v/s Ratio Perm			0.00				0.24			0.37		
v/c Ratio	0.73	0.09	0.03	0.44	0.21		0.37	0.59		0.58	0.50	
Uniform Delay, d1	32.5	28.3	28.0	34.4	32.1		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	11.1	0.1	0.0	1.2	0.3		2.6	0.8		8.9	0.5	
Delay (s)	43.6	28.3	28.1	35.6	32.3		8.9	8.6		16.5	7.6	
Level of Service	D	C	C	D	C		A	A		B	A	
Approach Delay (s)		38.1			33.6			8.6			8.3	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	630	485	409	0	0	0	0	863	458	261	639	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					3355		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3355		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)	685	527	445	0	0	0	0	938	498	284	695	0
RTOR Reduction (vph)	0	0	147	0	0	0	0	63	0	0	0	0
Lane Group Flow (vph)	685	527	298	0	0	0	0	1373	0	284	695	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	37.3	37.3	37.3					41.8		15.8	62.8	
Effective Green, g (s)	37.3	37.3	37.3					41.8		15.8	62.8	
Actuated g/C Ratio	0.34	0.34	0.34					0.38		0.14	0.57	
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)	600	632	537					1275		254	2020	
v/s Ratio Prot	c0.39	0.28						c0.41		c0.16	0.20	
v/s Ratio Perm			0.19									
v/c Ratio	1.14	0.83	0.56					1.08		1.12	0.34	
Uniform Delay, d1	36.4	33.5	29.6					34.1		47.1	12.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	82.4	10.8	2.8					48.6		91.9	0.0	
Delay (s)	118.8	44.3	32.4					82.7		139.0	12.6	
Level of Service	F	D	C					F		F	B	
Approach Delay (s)		71.9			0.0			82.7			49.3	
Approach LOS		E			A			F			D	

Intersection Summary

HCM Average Control Delay	70.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
38: 99 NB On-Ramp & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	352	517	443	643	857	0	0	539	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	482	699	932	0	0	586	260
RTOR Reduction (vph)	0	0	0	0	0	103	0	0	0	0	0	72
Lane Group Flow (vph)	0	0	0	0	945	379	699	932	0	0	586	188
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	65.0			20.0	20.0
Effective Green, g (s)					32.0	32.0	41.3	65.0			20.0	20.0
Actuated g/C Ratio					0.30	0.30	0.38	0.60			0.19	0.19
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)					1032	471	679	2138			658	294
v/s Ratio Prot					c0.27		c0.40	0.26			c0.17	
v/s Ratio Perm						0.24						0.12
v/c Ratio					0.92	0.80	1.03	0.44			0.89	0.64
Uniform Delay, d1					36.5	34.9	33.1	11.4			42.7	40.5
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					12.9	10.9	42.3	0.1			13.9	3.5
Delay (s)					49.4	45.8	75.4	11.5			56.7	44.0
Level of Service					D	D	E	B			E	D
Approach Delay (s)		0.0			48.2			38.9			52.8	
Approach LOS		A			D			D			D	

Intersection Summary

HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
40: H St & Fresno

4/11/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	20	637	950	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	1033	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	1033	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		0.18			0.09			0.29		0.01	0.15	
v/s Ratio Perm	0.02		c0.59	0.05			0.08					
v/c Ratio	0.07	0.57	0.59	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	1.5	0.4	0.1		0.2	0.8		3.1	0.1	
Delay (s)	14.8	18.1	1.5	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)		8.2			15.9			13.3			8.0	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	0.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
41: To H St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	84	23	19	14	1	3	57	72	751	82	106	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	1596			3477		1770	1863
Flt Permitted	0.89	1.00			0.89	1.00			0.88		0.28	1.00
Satd. Flow (perm)	1656	1735			1821	1596			3065		522	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)	91	25	21	15	1	3	62	78	816	89	115	555
RTOR Reduction (vph)	0	0	0	0	0	55	0	0	7	0	0	0
Lane Group Flow (vph)	91	46	0	0	16	10	0	0	976	0	115	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)	4.5	4.5			4.5	4.5			23.3		23.3	23.3
Effective Green, g (s)	4.5	4.5			4.5	4.5			23.3		23.3	23.3
Actuated g/C Ratio	0.12	0.12			0.12	0.12			0.62		0.62	0.62
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)	199	209			219	192			1909		325	1161
v/s Ratio Prot		0.03				0.01						0.30
v/s Ratio Perm	c0.05				0.01				c0.32		0.22	
v/c Ratio	0.46	0.22			0.07	0.05			0.51		0.35	0.48
Uniform Delay, d1	15.3	14.9			14.6	14.6			3.9		3.4	3.8
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.6	0.2			0.1	0.0			0.1		0.2	0.1
Delay (s)	15.9	15.1			14.7	14.6			4.0		3.7	3.9
Level of Service	B	B			B	B			A		A	A
Approach Delay (s)		15.6				14.6			4.0			3.7
Approach LOS		B				B			A			A

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	9.6
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR	SWR2
Lane Configurations		
Volume (vph)	5	117
Ideal Flow (vphpl)	1900	1900
Lane Width	15	12
Total Lost time (s)	4.8	
Lane Util. Factor	1.00	
Frt	0.85	
Flt Protected	1.00	
Satd. Flow (prot)	1742	
Flt Permitted	1.00	
Satd. Flow (perm)	1742	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	5	127
RTOR Reduction (vph)	48	0
Lane Group Flow (vph)	84	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	23.3	
Effective Green, g (s)	23.3	
Actuated g/C Ratio	0.62	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1085	
v/s Ratio Prot		
v/s Ratio Perm	0.05	
v/c Ratio	0.08	
Uniform Delay, d1	2.8	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	2.8	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
42: Van Ness Ave & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	214	211	180	99	265	204	149	611	92	64	459	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	0.93		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	1734		1770	3308		1770	3470		1770	3427	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1734		1770	3308		1770	3470		1770	3427	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	229	196	108	288	222	162	664	100	70	499	134
RTOR Reduction (vph)	0	36	0	0	165	0	0	14	0	0	29	0
Lane Group Flow (vph)	233	389	0	108	345	0	162	750	0	70	604	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	25.6		6.3	20.6		9.0	25.9		6.0	22.9	
Effective Green, g (s)	11.3	25.6		6.3	20.6		9.0	25.9		6.0	22.9	
Actuated g/C Ratio	0.14	0.32		0.08	0.26		0.11	0.32		0.07	0.28	
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)	249	552		139	848		198	1118		132	976	
v/s Ratio Prot	c0.13	c0.22		0.06	0.10		c0.09	c0.22		0.04	0.18	
v/s Ratio Perm												
v/c Ratio	0.94	0.70		0.78	0.41		0.82	0.67		0.53	0.62	
Uniform Delay, d1	34.2	24.1		36.4	24.8		34.9	23.6		35.8	25.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.5	5.1		23.4	0.7		22.4	2.1		4.0	1.7	
Delay (s)	73.7	29.2		59.7	25.5		57.3	25.7		39.9	26.7	
Level of Service	E	C		E	C		E	C		D	C	
Approach Delay (s)		44.9			31.5			31.2			28.0	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	33.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
43: M St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	126	893	102	0	0	0	0	420	213	246	593	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					3360		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.35	1.00	
Satd. Flow (perm)		5054	1583					3360		657	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	111	0	0	0	0	457	232	267	645	0
RTOR Reduction (vph)	0	0	74	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	1108	37	0	0	0	0	679	0	267	645	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					1759		344	1853	
v/s Ratio Prot		c0.22						0.20			0.18	
v/s Ratio Perm			0.02							c0.41		
v/c Ratio		0.65	0.07					0.39		0.78	0.35	
Uniform Delay, d1		16.8	13.5					8.5		11.4	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0					0.1		9.6	0.0	
Delay (s)		17.5	13.5					8.5		21.0	8.3	
Level of Service		B	B					A		C	A	
Approach Delay (s)		17.2			0.0			8.5			12.0	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
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
44: P St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	64	221	90	59	626	0	0	1015	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		291	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	64	680	0	0	1103	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	64	680	0	0	1103	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		135	1643			1643	735
v/s Ratio Prot					c0.10			0.19			c0.31	
v/s Ratio Perm							0.22					0.06
v/c Ratio					0.24		0.47	0.41			0.67	0.14
Uniform Delay, d1					12.0		10.8	10.4			12.2	9.0
Progression Factor					1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2					0.0		1.0	0.1			0.9	0.0
Delay (s)					12.0		11.7	10.5			13.1	9.0
Level of Service					B		B	B			B	A
Approach Delay (s)		0.0			12.0			10.6			12.4	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
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
45: R Street & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	158	183	295	99	180	53	300	404	32	68	875	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	5029		1770	3539	1583
Flt Permitted	0.42	1.00	1.00	0.51	1.00		0.26	1.00		0.47	1.00	1.00
Satd. Flow (perm)	778	1863	1583	957	1799		486	5029		877	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	439	35	74	951	243
RTOR Reduction (vph)	0	0	121	0	10	0	0	9	0	0	0	84
Lane Group Flow (vph)	172	199	200	108	244	0	326	465	0	74	951	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		319	3301		576	2323	1039
v/s Ratio Prot		0.11			0.14			0.09			0.27	
v/s Ratio Perm	c0.22		0.13	0.11			c0.67			0.08		0.10
v/c Ratio	0.87	0.42	0.50	0.44	0.53		1.02	0.14		0.13	0.41	0.15
Uniform Delay, d1	35.7	31.1	31.8	31.3	32.2		17.1	6.5		6.4	8.1	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	0.4	0.5	0.6		56.1	0.0		0.0	0.0	0.0
Delay (s)	66.9	31.4	32.2	31.8	32.8		73.3	6.5		6.5	8.1	6.6
Level of Service	E	C	C	C	C		E	A		A	A	A
Approach Delay (s)		40.6			32.5			33.7			7.7	
Approach LOS		D			C			C			A	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	8	117	13	635	202	367	355	547	47	80	150	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	1723	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)	532	1835		1180	1340	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	690	220	399	386	595	51	87	163	313
RTOR Reduction (vph)	0	5	0	0	0	235	0	0	32	0	0	264
Lane Group Flow (vph)	9	136	0	435	475	164	386	595	19	87	163	49
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)	31.0	31.0		31.0	31.0	31.0	19.6	24.5	24.5	6.9	11.8	11.8
Effective Green, g (s)	31.0	31.0		31.0	31.0	31.0	19.6	24.5	24.5	6.9	11.8	11.8
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.26	0.32	0.32	0.09	0.16	0.16
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)	218	752		484	549	649	459	903	513	162	536	247
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		0.90	0.87	0.25	0.84	0.66	0.04	0.54	0.30	0.20
Uniform Delay, d1	13.4	14.2		20.8	20.4	14.7	26.5	22.0	17.5	32.8	28.3	27.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		19.5	13.7	0.2	13.0	2.3	0.1	1.7	0.6	0.8
Delay (s)	13.5	14.3		40.3	34.1	14.9	39.6	24.2	17.5	34.5	28.9	28.5
Level of Service	B	B		D	C	B	D	C	B	C	C	C
Approach Delay (s)		14.3			30.3		29.6				29.6	
Approach LOS		B			C		C				C	

Intersection Summary

HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	8.6
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	15	134	110	1572	331	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	0.68	1.00	0.54	1.00	1.00	1.00
Satd. Flow (perm)	1266	1583	1000	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	146	120	1709	360	30
RTOR Reduction (vph)	0	98	0	0	0	14
Lane Group Flow (vph)	16	48	120	1709	360	16
Turn Type		custom	Perm			Perm
Protected Phases		4		2	6	
Permitted Phases	4		2			6
Actuated Green, G (s)	19.0	19.0	30.1	30.1	30.1	30.1
Effective Green, g (s)	19.0	19.0	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.33	0.33	0.52	0.52	0.52	0.52
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)	414	518	518	1833	1833	820
v/s Ratio Prot		c0.03		c0.48	0.10	
v/s Ratio Perm	0.01		0.12			0.01
v/c Ratio	0.04	0.09	0.23	0.93	0.20	0.02
Uniform Delay, d1	13.3	13.6	7.7	13.1	7.5	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0	0.1	9.1	0.0	0.0
Delay (s)	13.3	13.6	7.8	22.2	7.5	6.8
Level of Service	B	B	A	C	A	A
Approach Delay (s)	13.6			21.2	7.5	
Approach LOS	B			C	A	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	31	100	0	0	448	242	543	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			0.95				
Flt Protected		0.99			1.00			0.98				
Satd. Flow (prot)		3498			3353			4724				
Flt Permitted		0.77			1.00			0.98				
Satd. Flow (perm)		2739			3353			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	487	263	590	490	625	0	0	0
RTOR Reduction (vph)	0	0	0	0	129	0	0	192	0	0	0	0
Lane Group Flow (vph)	0	143	0	0	621	0	0	1513	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					c0.19			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)	108	735	0	0	76	71	0	0	177	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			4.2			
Lane Util. Factor	1.00	1.00			1.00	1.00			1.00			
Frt	1.00	1.00			1.00	0.85			0.85			
Flt Protected	0.95	1.00			1.00	1.00			1.00			
Satd. Flow (prot)	1770	1863			1863	1583			1583			
Flt Permitted	0.95	1.00			1.00	1.00			1.00			
Satd. Flow (perm)	1770	1863			1863	1583			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	799	0	0	83	77	0	0	192	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	70	0	0	143	0	0	0
Lane Group Flow (vph)	117	799	0	0	83	7	0	0	49	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)	38.3	38.3			6.6	6.6			19.6			
Effective Green, g (s)	38.3	38.3			6.6	6.6			19.6			
Actuated g/C Ratio	0.49	0.49			0.09	0.09			0.25			
Clearance Time (s)	4.6	4.6			4.2	4.2			4.2			
Vehicle Extension (s)	3.8	3.8			2.0	2.0			2.0			
Lane Grp Cap (vph)	875	921			159	135			400			
v/s Ratio Prot	0.07	c0.43			c0.04							
v/s Ratio Perm						0.00			c0.03			
v/c Ratio	0.13	0.87			0.52	0.05			0.12			
Uniform Delay, d1	10.6	17.4			33.9	32.6			22.3			
Progression Factor	1.00	1.00			1.00	1.00			1.00			
Incremental Delay, d2	0.1	8.9			1.4	0.1			0.0			
Delay (s)	10.7	26.3			35.4	32.6			22.4			
Level of Service	B	C			D	C			C			
Approach Delay (s)		24.3			34.0			22.4			0.0	
Approach LOS		C			C			C			A	

Intersection Summary

HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.9%	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)	519	477	0	0	308	67	42	232	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.95				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1813		1770	1777				
Flt Permitted	0.44	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	819	1863			1813		1770	1777				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	564	518	0	0	335	73	46	252	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	27	0	0	0	0
Lane Group Flow (vph)	564	518	0	0	395	0	46	336	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	29.6	29.6			29.6		22.0	22.0				
Effective Green, g (s)	29.6	29.6			29.6		22.0	22.0				
Actuated g/C Ratio	0.49	0.49			0.49		0.37	0.37				
Clearance Time (s)	4.2	4.2			4.2		4.2	4.2				
Vehicle Extension (s)	0.2	0.2			0.2		0.2	0.2				
Lane Grp Cap (vph)	404	919			894		649	652				
v/s Ratio Prot		0.28			0.22		0.03	c0.19				
v/s Ratio Perm	c0.69											
v/c Ratio	1.40	0.56			0.44		0.07	0.52				
Uniform Delay, d1	15.2	10.7			9.8		12.4	14.8				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	192.7	0.5			0.1		0.0	0.3				
Delay (s)	207.9	11.1			10.0		12.4	15.1				
Level of Service	F	B			A		B	B				
Approach Delay (s)		113.7			10.0			14.8			0.0	
Approach LOS		F			A			B			A	

Intersection Summary

HCM Average Control Delay	70.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	117	124	90	262	519	0	0	0	25	905	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			3206					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	564	0	0	0	27	984	86
RTOR Reduction (vph)	0	94	0	0	318	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	168	0	0	629	0	0	0	0	27	1061	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			0.74					0.18	0.66	
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			2.9					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	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	137	496	10	159	0	52	467	554	115	635	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	508	602	125	690	17
RTOR Reduction (vph)	0	145	0	0	0	0	0	0	375	0	0	3
Lane Group Flow (vph)	0	543	0	11	173	0	57	508	227	125	690	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	32.5	32.5	7.0	36.4	36.4
Effective Green, g (s)		29.5		0.7	34.2		3.1	32.5	32.5	7.0	36.4	36.4
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)		563		14	740		64	703	598	144	788	669
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		27.8		42.6	17.2		41.3	22.9	19.5	39.1	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		28.7		130.6	0.1		74.9	3.1	0.1	38.7	10.4	0.0
Delay (s)		56.5		173.2	17.3		116.2	26.1	19.6	77.7	33.2	14.5
Level of Service		E		F	B		F	C	B	E	C	B
Approach Delay (s)		56.5			26.6			27.1			39.5	
Approach LOS		E			C			C			D	

Intersection Summary

HCM Average Control Delay	37.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	16.4
Intersection Capacity Utilization	88.8%	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	303	15	76	272	0	0	0	433	247	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)		1851		1770	1863			1583		1770	1845	
Flt Permitted		1.00		0.37	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1851		692	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	329	16	83	296	0	0	0	471	268	688	47
RTOR Reduction (vph)	0	2	0	0	0	0	0	219	0	0	2	0
Lane Group Flow (vph)	0	343	0	83	296	0	0	252	0	268	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)		613		229	617			412		460	1051	
v/s Ratio Prot		c0.19			0.16			0.16		0.15	c0.40	
v/s Ratio Perm				0.12								
v/c Ratio		0.56		0.36	0.48			0.61		0.58	0.70	
Uniform Delay, d1		23.2		21.5	22.5			27.5		27.3	13.0	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.6		0.4	0.2			1.9		1.2	1.6	
Delay (s)		23.9		21.9	22.7			29.4		28.5	14.6	
Level of Service		C		C	C			C		C	B	
Approach Delay (s)		23.9			22.5			29.4			18.3	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.4
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	SBR2	SET	SER	NWL	NWT	NET	SWL	SWT
Lane Configurations										
Volume (vph)	294	1099	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	1195	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	1198	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)	35.5	35.5		3.2			6.3		9.2	9.2
Effective Green, g (s)	35.5	35.5		3.2			6.3		9.2	9.2
Actuated g/C Ratio	0.49	0.49		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)	874	1376		72			161		180	238
v/s Ratio Prot	0.18	c0.43		c0.00			c0.04			0.06
v/s Ratio Perm									c0.07	
v/c Ratio	0.37	0.87		0.03			0.47		0.58	0.47
Uniform Delay, d1	11.2	16.2		32.9			31.2		29.5	29.1
Progression Factor	1.00	1.00		1.00			1.00		1.00	1.00
Incremental Delay, d2	0.4	6.5		0.1			0.8		5.6	2.0
Delay (s)	11.6	22.6		32.9			32.0		35.1	31.0
Level of Service	B	C		C			C		D	C
Approach Delay (s)	20.3			32.9			32.0	0.0		33.0
Approach LOS	C			C			C	A		C

Intersection Summary

HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	17.7
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/9/2012

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	NEL
Right Turn Channelized											
Volume (veh/h)	135	375	21	72	94	50	225	74	488	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	530	24	0
Approach Volume (veh/h)		577			235				879		0
Crossing Volume (veh/h)		323			1002				554		554
High Capacity (veh/h)		1075			621				894		894
High v/c (veh/h)		0.54			0.38				0.98		0.00
Low Capacity (veh/h)		881			482				719		719
Low v/c (veh/h)		0.66			0.49				1.22		0.00

Intersection Summary			
Maximum v/c High	0.98		
Maximum v/c Low	1.22		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis
57: E Divisadero St & N Blackstone Ave

4/10/2012

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	1354	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	1472	187
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	499	0	0	357	0	0	0	0	114	1472	135
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	c0.42	
v/s Ratio Perm												0.09
v/c Ratio		0.34			0.24					0.15	0.95	0.19
Uniform Delay, d1		13.0			12.4					10.9	17.5	11.1
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.3			0.2					0.2	12.5	0.3
Delay (s)		13.3			12.5					11.1	29.9	11.4
Level of Service		B			B					B	C	B
Approach Delay (s)		13.3			12.5			0.0			26.8	
Approach LOS		B			B			A			C	

Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	6	1594	354	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	1733	385	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	396				2136	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	396				2136	390
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				82	99
cM capacity (veh/h)	1163				54	658

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1739	396	17
Volume Left	7	0	10
Volume Right	0	11	8
cSH	1163	1700	90
Volume to Capacity	0.01	0.23	0.19
Queue Length 95th (ft)	0	0	17
Control Delay (s)	0.0	0.0	54.4
Lane LOS	A		F
Approach Delay (s)	0.0	0.0	54.4
Approach LOS			F

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
59: E Divisadero St & N San Pablo Ave

4/10/2012

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 Unsignalized Intersection Capacity Analysis
60: H St & Amador St

4/10/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	49	1548	342	21	52	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	1683	372	23	57	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	395				2172	383
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395				2172	383
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				0	91
cM capacity (veh/h)	1164				49	664

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1736	395	118
Volume Left	53	0	57
Volume Right	0	23	62
cSH	1164	1700	95
Volume to Capacity	0.05	0.23	1.25
Queue Length 95th (ft)	4	0	208
Control Delay (s)	8.2	0.0	255.2
Lane LOS	A		F
Approach Delay (s)	8.2	0.0	255.2
Approach LOS			F

Intersection Summary			
Average Delay	19.8		
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/10/2012

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	175	0	36	0	805	168	5	352	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)		4.5			4.9		4.9	4.9			
Lane Util. Factor		0.97			0.95		1.00	1.00			
Frt		0.97			0.97		1.00	1.00			
Flt Protected		0.96			1.00		0.95	1.00			
Satd. Flow (prot)		3381			3447		1770	1863			
Flt Permitted		0.76			1.00		0.22	1.00			
Satd. Flow (perm)		2687			3447		403	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
Adj. Flow (vph)	190	0	39	0	875	183	5	383	0	0	0
RTOR Reduction (vph)	0	28	0	0	28	0	0	0	0	0	0
Lane Group Flow (vph)	0	201	0	0	1030	0	5	383	0	0	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)		15.3			30.8		30.8	30.8			
Effective Green, g (s)		15.3			30.8		30.8	30.8			
Actuated g/C Ratio		0.28			0.55		0.55	0.55			
Clearance Time (s)		4.5			4.9		4.9	4.9			
Vehicle Extension (s)		5.0			4.0		4.0	4.0			
Lane Grp Cap (vph)		741			1913		224	1034			
v/s Ratio Prot					c0.30			0.21			
v/s Ratio Perm		c0.07					0.01				
v/c Ratio		0.27			0.54		0.02	0.37			
Uniform Delay, d1		15.7			7.8		5.6	6.9			
Progression Factor		1.00			1.00		1.00	1.00			
Incremental Delay, d2		0.4			0.4		0.1	0.3			
Delay (s)		16.1			8.2		5.6	7.2			
Level of Service		B			A		A	A			
Approach Delay (s)		16.1			8.2			7.2		0.0	
Approach LOS		B			A			A		A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	9.4
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
63: E Divisadero St & N Echo St

4/10/2012

Movement	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL
Lane Configurations												
Volume (vph)	29	9	11	35	774	1	42	288	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	0.97			0.87	0.85				1.00	0.85	0.86	0.90
Flt Protected	1.00			1.00	1.00				0.95	1.00	1.00	0.98
Satd. Flow (prot)	1803			1532	1504				3362	1583	1611	3196
Flt Permitted	1.00			0.99	1.00				0.95	1.00	1.00	0.46
Satd. Flow (perm)	1803			1525	1504				3362	1583	1611	1478
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	10	12	38	841	1	46	313	0	46	3	782
RTOR Reduction (vph)	6	0	0	0	0	0	0	0	0	39	3	0
Lane Group Flow (vph)	36	0	0	445	447	0	0	0	359	7	0	2412
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)	45.7			45.7	45.7				17.4	17.4	17.8	39.8
Effective Green, g (s)	45.7			45.7	45.7				17.4	17.4	17.8	39.8
Actuated g/C Ratio	0.39			0.39	0.39				0.15	0.15	0.15	0.34
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)	706			597	589				501	236	246	1090
v/s Ratio Prot	0.02										0.00	c0.75
v/s Ratio Perm				0.29	c0.30				0.11	0.00		
v/c Ratio	0.05			0.75	0.76				1.36dl	0.03	0.00	2.97dr
Uniform Delay, d1	22.0			30.5	30.7				47.3	42.4	41.9	38.5
Progression Factor	1.00			1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1			6.0	6.6				5.2	0.1	0.0	548.8
Delay (s)	22.1			36.5	37.4				52.5	42.5	41.9	587.2
Level of Service	C			D	D				D	D	D	F
Approach Delay (s)	22.1			36.9					51.4			587.2
Approach LOS	C			D					D			F

Intersection Summary

HCM Average Control Delay	391.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	116.7	Sum of lost time (s)	13.8
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	SER	SER2
Lane Configurations		
Volume (vph)	1499	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)	1629	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
64: E Divisadero St & Broadway St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	86	1021	258	15	621	31	157	308	151	20	35	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	0.98	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3526	1583		3510		1770	1771		1770	1819	
Flt Permitted		0.83	1.00		0.92		0.73	1.00		0.28	1.00	
Satd. Flow (perm)		2921	1583		3229		1356	1771		525	1819	
Peak-hour factor, PHF	0.92	0.92	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	675	34	171	335	164	22	38	7
RTOR Reduction (vph)	0	0	116	0	6	0	0	29	0	0	4	0
Lane Group Flow (vph)	0	1203	164	0	719	0	171	470	0	22	41	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		518	676		200	694	
v/s Ratio Prot								c0.27			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	0.70		0.11	0.06	
Uniform Delay, d1		14.4	9.4		10.9		12.7	15.1		11.6	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	2.5		0.1	0.0	
Delay (s)		22.3	9.5		11.0		12.8	17.6		11.6	11.3	
Level of Service		C	A		B		B	B		B	B	
Approach Delay (s)		19.9			11.0			16.4			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	0.81		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	86.2%	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

4/10/2012

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	255	505	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3314	
Flt Permitted		1.00			0.92		0.19		1.00	0.95	1.00	
Satd. Flow (perm)		3531			3244		349		1583	1770	3314	
Peak-hour factor, PHF	0.92	0.92	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	277	549	403
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	10	0	223	0
Lane Group Flow (vph)	0	1293	0	0	321	0	29	0	7	277	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			0.16		
v/c Ratio		0.83			0.22		0.20		0.01	0.39	0.54	
Uniform Delay, d1		14.6			10.3		11.4		10.5	12.4	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	12.5	13.6	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.2			10.3			11.2			13.4	
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
66: E Divisadero St & N Van Ness Ave

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	398	720	272	6	226	44	60	163	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)		3387			3451			3463				
Flt Permitted		0.75			0.92			0.99				
Satd. Flow (perm)		2581			3185			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)	433	783	296	7	246	48	65	177	16	0	0	0
RTOR Reduction (vph)	0	27	0	0	19	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1485	0	0	282	0	0	252	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		8			4		6	6				
Permitted Phases	8			4								
Actuated Green, G (s)		45.7			45.7			22.1				
Effective Green, g (s)		45.7			45.7			22.1				
Actuated g/C Ratio		0.60			0.60			0.29				
Clearance Time (s)		4.5			4.5			4.2				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		1542			1903			1000				
v/s Ratio Prot								c0.07				
v/s Ratio Perm		c0.58			0.09							
v/c Ratio		0.96			0.15			0.25				
Uniform Delay, d1		14.6			6.8			20.9				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		14.9			0.0			0.0				
Delay (s)		29.4			6.8			20.9				
Level of Service		C			A			C				
Approach Delay (s)		29.4			6.8			20.9			0.0	
Approach LOS		C			A			C			A	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	8.7
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
67: N Roosevelt Ave. & N H St

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	57	0	18	2	0	0	1	2190	29	40	1119	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		1.00	
Satd. Flow (prot)	1770	1583			1770			3539	1583		3530	
Flt Permitted	0.76	1.00			0.74			0.95	1.00		0.64	
Satd. Flow (perm)	1409	1583			1386			3379	1583		2276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	0	20	2	0	0	1	2380	32	43	1216	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	62	20	0	0	2	0	0	2381	28	0	1266	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)	14.0	14.0			14.0			43.8	43.8		43.8	
Effective Green, g (s)	14.0	14.0			14.0			43.8	43.8		43.8	
Actuated g/C Ratio	0.21	0.21			0.21			0.66	0.66		0.66	
Clearance Time (s)	4.6	4.6			4.6			4.2	4.2		4.2	
Vehicle Extension (s)	5.0	5.0			5.0			4.0	4.0		4.0	
Lane Grp Cap (vph)	296	333			291			2222	1041		1497	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.04				0.00			c0.70	0.02		0.56	
v/c Ratio	0.21	0.06			0.01			1.07	0.03		0.85	
Uniform Delay, d1	21.7	21.0			20.8			11.4	4.0		8.8	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.2			0.0			41.6	0.0		4.8	
Delay (s)	22.5	21.2			20.8			53.0	4.0		13.6	
Level of Service	C	C			C			D	A		B	
Approach Delay (s)		22.2			20.8			52.3			13.6	
Approach LOS		C			C			D			B	

Intersection Summary

HCM Average Control Delay	38.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	8.8
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: E McKenzie Ave. & N Blackstone Ave

4/10/2012

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	1445	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						5024	
Flt Permitted		1.00			0.75						0.99	
Satd. Flow (perm)		1799			1395						5024	
Peak-hour factor, PHF	0.92	0.92	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	1571	85
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	246	0	0	217	0	0	0	0	0	1844	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						2573	
v/s Ratio Prot		0.14									c0.37	
v/s Ratio Perm					c0.16							
v/c Ratio		0.47			0.54						0.72	
Uniform Delay, d1		13.4			13.7						8.6	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.9			1.8						1.2	
Delay (s)		14.3			15.4						9.8	
Level of Service		B			B						A	
Approach Delay (s)		14.3			15.4			0.0			9.8	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	9.1
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
69: E McKenzie Ave. & N Abby St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	265	0	0	161	92	45	642	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			5010				
Flt Permitted		0.87			1.00			1.00				
Satd. Flow (perm)		1624			1771			5010				
Peak-hour factor, PHF	0.92	0.92	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	698	64	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	367	0	0	230	0	0	793	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			2206				
v/s Ratio Prot					0.13			c0.16				
v/s Ratio Perm		c0.23										
v/c Ratio		0.64			0.37			0.36				
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	0.49		
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
70: 180 EB Off-Ramp & N Fulton St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	636	163	0	0	0	0	0	0	886	836	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2									4.6	
Lane Util. Factor		0.95									0.95	
Frt		0.97									1.00	
Flt Protected		1.00									0.97	
Satd. Flow (prot)		3431									3450	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3431									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	177	0	0	0	0	0	0	963	909	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	38	0
Lane Group Flow (vph)	0	843	0	0	0	0	0	0	0	0	1834	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		31.1									48.9	
Effective Green, g (s)		31.1									48.9	
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									1900	
v/s Ratio Prot		c0.25										
v/s Ratio Perm											0.53	
v/c Ratio		0.70									0.97	
Uniform Delay, d1		24.8									19.1	
Progression Factor		1.00									1.00	
Incremental Delay, d2		2.9									13.7	
Delay (s)		27.8									32.8	
Level of Service		C									C	
Approach Delay (s)		27.8			0.0			0.0			32.8	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	8.8
Intersection Capacity Utilization	79.2%	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

4/10/2012

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	370	1155	0	0	287	330	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	312	359	0	0	0	0	0
RTOR Reduction (vph)	37	0	0	0	0	86	0	0	0	0	0
Lane Group Flow (vph)	365	1255	0	0	312	273	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			19.2	19.2					
Effective Green, g (s)	71.4	71.4			19.2	19.2					
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)	1266	1266			681	305					
v/s Ratio Prot	0.21	c0.71			0.09						
v/s Ratio Perm						c0.17					
v/c Ratio	0.29	0.99			0.46	0.89					
Uniform Delay, d1	5.1	13.9			35.7	39.3					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.3	23.2			0.8	27.4					
Delay (s)	5.4	37.1			36.5	66.7					
Level of Service	A	D			D	E					
Approach Delay (s)		29.4			52.7			0.0		0.0	
Approach LOS		C			D			A		A	

Intersection Summary

HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	99.8	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
72: 180 WB Ramps & N Fulton St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1013	563	6	51	0	0	0	0	0	955	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		1852						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	55	0	0	0	0	0	1038	182
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1101	604	0	62	0	0	0	0	0	1206	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		0.05							
v/c Ratio		1.03	0.67		0.09						1.00	
Uniform Delay, d1		21.4	14.7		9.6						32.5	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		36.1	2.5		0.1						25.3	
Delay (s)		57.4	17.2		9.7						57.8	
Level of Service		E	B		A						E	
Approach Delay (s)		43.0			9.7			0.0			57.8	
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	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
73: 180 WB Ramps & N Van Ness Ave

4/10/2012

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1040	0	56	611	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			3524		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			3524		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1130	0	61	664	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1130	0	0	725	0	0
Turn Type			Split			
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	57.4			23.0		
Effective Green, g (s)	57.4			23.0		
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)	1134			905		
v/s Ratio Prot	c0.64			c0.21		
v/s Ratio Perm						
v/c Ratio	1.00			0.80		
Uniform Delay, d1	16.0			31.2		
Progression Factor	1.00			1.00		
Incremental Delay, d2	25.7			5.8		
Delay (s)	41.7			37.0		
Level of Service	D			D		
Approach Delay (s)	41.7			37.0	0.0	
Approach LOS	D			D	A	

Intersection Summary

HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
74: E Belmont Ave. & N Blackstone Ave

4/10/2012

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	1457	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						4937	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3492		1770	3539						4937	
Peak-hour factor, PHF	0.92	0.92	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	1584	316
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1755	0	121	409	0	0	0	0	0	2295	0
Turn Type				Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases												
Actuated Green, G (s)		64.8		8.3	76.8						64.1	
Effective Green, g (s)		64.8		8.3	76.8						64.1	
Actuated g/C Ratio		0.43		0.06	0.51						0.43	
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)		1509		98	1812						2110	
v/s Ratio Prot		c0.50		c0.07	0.12						c0.46	
v/s Ratio Perm												
v/c Ratio		1.16		1.23	0.23						1.09	
Uniform Delay, d1		42.6		70.8	20.2						43.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		81.0		166.8	0.2						48.1	
Delay (s)		123.6		237.6	20.4						91.0	
Level of Service		F		F	C						F	
Approach Delay (s)		123.6			70.0			0.0			91.0	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	101.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	104.7%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	908	934	0	0	459	158	44	714	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		5071	1583			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1770	3539			3539	1583		5071	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	776	27	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	58	0	0	18	0	0	0
Lane Group Flow (vph)	987	1015	0	0	499	114	0	824	9	0	0	0
Turn Type	Prot					Perm	Split		Perm			
Protected Phases	7	4			8		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)	80.4	108.7			24.6	24.6		26.0	26.0			
Effective Green, g (s)	80.4	108.7			24.6	24.6		26.0	26.0			
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)	990	2675			605	271		917	286			
v/s Ratio Prot	c0.56	0.29			c0.14			c0.16				
v/s Ratio Perm						0.07			0.01			
v/c Ratio	1.00	0.38			0.82	0.42		0.90	0.03			
Uniform Delay, d1	31.6	6.0			57.5	53.2		57.6	48.5			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	27.6	0.2			10.0	2.3		11.2	0.0			
Delay (s)	59.2	6.2			67.6	55.5		68.8	48.5			
Level of Service	E	A			E	E		E	D			
Approach Delay (s)		32.3			64.5			68.2			0.0	
Approach LOS		C			E			E			A	

Intersection Summary

HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	143.8	Sum of lost time (s)	12.8
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
76: Fresno St. &

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	688	144	418	510	38	70	183	104	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	3347		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	3347		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	454	554	41	76	199	113	74	384	64
RTOR Reduction (vph)	0	12	0	0	3	0	0	61	0	0	10	0
Lane Group Flow (vph)	60	893	0	454	592	0	76	251	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)	7.0	39.5		36.8	69.3		8.1	18.8		7.7	28.4	
Effective Green, g (s)	7.0	39.5		36.8	69.3		8.1	18.8		7.7	28.4	
Actuated g/C Ratio	0.05	0.30		0.28	0.53		0.06	0.14		0.06	0.22	
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)	95	1047		501	1867		110	484		105	757	
v/s Ratio Prot	0.03	c0.26		c0.26	0.17		c0.04	0.08		0.04	c0.13	
v/s Ratio Perm												
v/c Ratio	0.63	0.85		0.91	0.32		0.69	0.52		0.70	0.58	
Uniform Delay, d1	60.2	42.5		44.9	17.1		59.7	51.4		60.0	45.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.6	7.5		19.5	0.2		14.0	1.9		16.1	1.7	
Delay (s)	69.9	50.1		64.4	17.3		73.7	53.3		76.1	47.2	
Level of Service	E	D		E	B		E	D		E	D	
Approach Delay (s)		51.3			37.7			57.3			51.3	
Approach LOS		D			D			E			D	

Intersection Summary

HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
77: Belmont Steet & First Street

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	498	215	154	651	114	284	462	55	101	638	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3460		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	3460		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)	148	541	234	167	708	124	309	502	60	110	693	184
RTOR Reduction (vph)	0	0	131	0	15	0	0	9	0	0	0	95
Lane Group Flow (vph)	148	541	103	167	817	0	309	553	0	110	693	89
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)	8.0	24.4	24.4	10.0	26.4		17.0	33.9		8.4	25.3	25.3
Effective Green, g (s)	8.0	24.4	24.4	10.0	26.4		17.0	33.9		8.4	25.3	25.3
Actuated g/C Ratio	0.08	0.26	0.26	0.11	0.28		0.18	0.36		0.09	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)	150	914	409	187	967		318	1249		157	947	424
v/s Ratio Prot	0.08	0.15		c0.09	c0.24		c0.17	0.16		0.06	c0.20	
v/s Ratio Perm			0.06									0.06
v/c Ratio	0.99	0.59	0.25	0.89	0.84		0.97	0.44		0.70	0.73	0.21
Uniform Delay, d1	43.2	30.7	27.8	41.7	32.1		38.5	23.1		41.8	31.5	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	68.7	1.4	0.6	36.6	7.4		42.4	0.5		10.9	3.6	0.5
Delay (s)	111.9	32.1	28.4	78.3	39.5		80.9	23.6		52.7	35.1	27.4
Level of Service	F	C	C	E	D		F	C		D	D	C
Approach Delay (s)		43.9			46.0			44.0			35.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	12.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	168	0	0	0	271	1960
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					5055
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5055
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	0	0	0	295	2130
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	183	0	0	0	0	2425
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					3129
v/s Ratio Prot	c0.10					c0.48
v/s Ratio Perm						
v/c Ratio	0.52					0.78
Uniform Delay, d1	17.8					6.9
Progression Factor	1.00					1.00
Incremental Delay, d2	2.5					1.5
Delay (s)	20.3					8.4
Level of Service	C					A
Approach Delay (s)	20.3		0.0			8.4
Approach LOS	C		A			A

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	155.2%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	272	0	0	169	489	2	636	1129	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)	892	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	691	1227	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	241	0	0	54	0	0	0
Lane Group Flow (vph)	8	296	0	0	184	291	0	693	1173	0	0	0
Turn Type	Perm					Perm	Split		Perm			
Protected Phases		4			4		2	2				
Permitted Phases	4					4			2			
Actuated Green, G (s)	25.5	25.5			25.5	25.5		84.6	84.6			
Effective Green, g (s)	25.5	25.5			25.5	25.5		84.6	84.6			
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)	191	399			399	339		3609	1124			
v/s Ratio Prot		0.16			0.10			0.14				
v/s Ratio Perm	0.01					c0.18			c0.74			
v/c Ratio	0.04	0.74			0.46	0.86		0.19	1.04			
Uniform Delay, d1	37.2	43.8			40.9	45.1		5.8	17.3			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	0.2	9.4			2.2	21.2		0.1	39.0			
Delay (s)	37.4	53.2			43.0	66.3		5.9	56.3			
Level of Service	D	D			D	E		A	E			
Approach Delay (s)		52.7			60.3			38.1			0.0	
Approach LOS		D			E			D			A	

Intersection Summary

HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	9.1
Intersection Capacity Utilization	141.4%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	415	1268	5	146	0	0	0	0	3	935	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)		1673		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1673		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	1378	5	159	0	0	0	0	3	1016	352
RTOR Reduction (vph)	0	57	0	0	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	1772	0	5	159	0	0	0	0	0	1019	181
Turn Type				Prot						Split		Perm
Protected Phases		4		3	8					6	6	
Permitted Phases												6
Actuated Green, G (s)		93.9		1.1	98.7						36.1	36.1
Effective Green, g (s)		93.9		1.1	98.7						36.1	36.1
Actuated g/C Ratio		0.65		0.01	0.69						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)		1092		14	1278						888	397
v/s Ratio Prot		c1.06		c0.00	0.09						c0.29	
v/s Ratio Perm												0.11
v/c Ratio		1.62		0.36	0.12						1.15	0.46
Uniform Delay, d1		25.0		71.0	7.8						53.9	45.6
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		284.5		5.6	0.1						79.5	1.9
Delay (s)		309.5		76.7	7.8						133.4	47.5
Level of Service		F		E	A						F	D
Approach Delay (s)		309.5			9.9			0.0			111.4	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	214.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	133.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	562	26	57	49	32	5	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	28	62	53	35	5	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			639			851	852	320	567	849	71
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88			639			851	852	320	567	849	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			98	85	95	94	91	100
cM capacity (veh/h)	1506			941			222	274	676	326	276	977

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	313	334	150	77	48
Volume Left	8	0	62	5	18
Volume Right	0	28	35	32	3
cSH	1506	1700	941	354	309
Volume to Capacity	0.01	0.20	0.07	0.22	0.15
Queue Length 95th (ft)	0	0	5	20	14
Control Delay (s)	0.2	0.0	4.1	18.0	18.8
Lane LOS	A		A	C	C
Approach Delay (s)	0.1		4.1	18.0	18.8
Approach LOS				C	C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

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 Signalized Intersection Capacity Analysis
83: F St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	74	115	168	106	12	30	77	1080	88	28	622	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	2049	1742	1947	2049	1742	1947	3849		1947	3568	
Flt Permitted	0.75	1.00	1.00	0.68	1.00	1.00	0.26	1.00		0.26	1.00	
Satd. Flow (perm)	1535	2049	1742	1387	2049	1742	529	3849		529	3568	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	125	183	115	13	33	84	1174	96	30	676	847
RTOR Reduction (vph)	0	0	87	0	0	15	0	13	0	0	433	0
Lane Group Flow (vph)	80	125	96	115	13	18	84	1257	0	30	1090	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)	8.2	8.2	8.2	8.2	8.2	8.2	15.5	15.5		15.5	15.5	
Effective Green, g (s)	8.2	8.2	8.2	8.2	8.2	8.2	15.5	15.5		15.5	15.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26	0.49	0.49		0.49	0.49	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	397	530	451	359	530	451	259	1882		259	1745	
v/s Ratio Prot		0.06			0.01			c0.33			0.31	
v/s Ratio Perm	0.05		0.06	c0.08		0.01	0.16			0.06		
v/c Ratio	0.20	0.24	0.21	0.32	0.02	0.04	0.32	0.67		0.12	0.62	
Uniform Delay, d1	9.2	9.3	9.2	9.5	8.8	8.8	4.9	6.1		4.4	6.0	
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	0.3	0.2	0.2	0.5	0.0	0.0	0.7	0.9		0.2	0.7	
Delay (s)	9.4	9.5	9.5	10.0	8.8	8.8	5.7	7.1		4.6	6.7	
Level of Service	A	A	A	B	A	A	A	A		A	A	
Approach Delay (s)		9.5			9.7			7.0			6.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	31.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	61	68	124	91	38	9
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)	66	74	135	99	41	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)	978			544		
pX, platoon unblocked						
vC, conflicting volume			140		472	103
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		472	103
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		92	99
cM capacity (veh/h)			1443		499	952

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	140	234	51
Volume Left	0	135	41
Volume Right	74	0	10
cSH	1700	1443	549
Volume to Capacity	0.08	0.09	0.09
Queue Length 95th (ft)	0	8	8
Control Delay (s)	0.0	4.8	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	4.8	12.2
Approach LOS			B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St & Mono Street

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	80	85	9	10	156	0	7	5	8	8	8	171
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)	87	92	10	11	170	0	8	5	9	9	9	186
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		469										
pX, platoon unblocked												
vC, conflicting volume	170			102			653	462	97	474	467	170
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	170			102			653	462	97	474	467	170
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			99			97	99	99	98	98	79
cM capacity (veh/h)	1408			1490			280	462	959	466	459	874

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	189	180	22	203
Volume Left	87	11	8	9
Volume Right	10	0	9	186
cSH	1408	1490	453	812
Volume to Capacity	0.06	0.01	0.05	0.25
Queue Length 95th (ft)	5	1	4	25
Control Delay (s)	3.8	0.5	13.3	10.9
Lane LOS	A	A	B	B
Approach Delay (s)	3.8	0.5	13.3	10.9
Approach LOS			B	B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	39.8%	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)	103	22	53	31	13	6	126	1058	16	10	762	370
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)	112	24	58	34	14	7	137	1150	17	11	828	402
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								699			472	
pX, platoon unblocked	0.92	0.92	0.87	0.92	0.92	0.86	0.87			0.86		
vC, conflicting volume	1914	2492	615	1938	2685	584	1230			1167		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1169	1797	246	1196	2005	176	957			858		
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	57	91	49	66	99	78			98		
cM capacity (veh/h)	83	56	653	66	42	716	619			666		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	193	54	137	767	401	11	552	678
Volume Left	112	34	137	0	0	11	0	0
Volume Right	58	7	0	0	17	0	0	402
cSH	104	63	619	1700	1700	666	1700	1700
Volume to Capacity	1.87	0.86	0.22	0.45	0.24	0.02	0.32	0.40
Queue Length 95th (ft)	395	100	21	0	0	1	0	0
Control Delay (s)	494.0	181.4	12.5	0.0	0.0	10.5	0.0	0.0
Lane LOS	F	F	B			B		
Approach Delay (s)	494.0	181.4	1.3			0.1		
Approach LOS	F	F						

Intersection Summary			
Average Delay	38.4		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	55	30	0	379	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	60	33	0	412	0	0	0	0	245	111	661

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	92	412	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	0.59	0.00	0.53	0.59
Capacity (veh/h)	609	671	533	631	1118
Control Delay (s)	9.2	15.1	8.9	14.4	10.6
Approach Delay (s)	9.2	15.1	0.0	12.0	
Approach LOS	A	C	A	B	

Intersection Summary			
Delay	12.7		
HCM Level of Service	B		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
89: M St & San Benito Street

4/10/2012

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
90: Broadway St & Santa Clara Street

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	141	242	28	5	62	35	31	10	12	60	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	30	5	67	38	34	11	13	65	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)		502										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	105			293			724	701	278	701	697	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	105			102			601	574	84	574	570	86
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			100			89	97	98	80	94	97
cM capacity (veh/h)	1486			1286			302	331	841	327	332	972

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	447	111	58	117
Volume Left	153	5	34	65
Volume Right	30	38	13	33
cSH	1486	1286	360	402
Volume to Capacity	0.10	0.00	0.16	0.29
Queue Length 95th (ft)	9	0	14	30
Control Delay (s)	3.3	0.4	16.9	17.6
Lane LOS	A	A	C	C
Approach Delay (s)	3.3	0.4	16.9	17.6
Approach LOS			C	C

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	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
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	139	140	77
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	151	152	84
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	862	690	194	953	723	117	236			126		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	862	690	194	953	723	117	236			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 %	0	0	91	0	0	97	97			90		
cM capacity (veh/h)	0	322	847	0	308	935	1331			1460		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	490	352	160	387
Volume Left	23	16	34	151
Volume Right	76	27	17	84
cSH	0	0	1331	1460
Volume to Capacity	Err	Err	0.03	0.10
Queue Length 95th (ft)	Err	Err	2	9
Control Delay (s)	Err	Err	1.8	3.6
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	1.8	3.6
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
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	529	1113	156	268	946	277
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	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1947	3893	1742	1947	2049	1742	1947	3821		1947	3761	
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	3761	
Peak-hour factor, PHF	0.92	0.92	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	575	1210	170	291	1028	301
RTOR Reduction (vph)	0	0	291	0	0	315	0	18	0	0	39	0
Lane Group Flow (vph)	147	590	166	164	484	114	575	1362	0	291	1290	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	1066	
v/s Ratio Prot		0.15			0.24		c0.30	0.36		0.15	c0.34	
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	1.18	0.97		0.90	1.21	
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	100.8	17.7		25.4	103.6	
Delay (s)	119.7	19.7	18.3	101.9	37.0	17.5	123.3	36.4		49.9	125.1	
Level of Service	F	B	B	F	D	B	F	D		D	F	
Approach Delay (s)		31.5			39.1			61.9			111.6	
Approach LOS		C			D			E			F	

Intersection Summary

HCM Average Control Delay	65.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
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)	104	335	67	137	265	26	24	1336	342	116	1262	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	1372	103
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	218	0	0	44
Lane Group Flow (vph)	113	427	0	149	311	0	26	1452	154	126	1372	59
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	c0.35	
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	0.86	0.08
Uniform Delay, d1	31.3	27.8		30.3	24.4		33.0	22.5	15.8	31.5	19.1	12.8
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	9.2	44.1		9.3	3.2		2.4	31.3	0.2	15.2	5.0	0.1
Delay (s)	40.5	71.9		39.6	27.6		35.4	53.8	16.0	46.7	24.0	12.8
Level of Service	D	E		D	C		D	D	B	D	C	B
Approach Delay (s)		65.4			31.5			45.9			25.1	
Approach LOS		E			C			D			C	

Intersection Summary

HCM Average Control Delay	39.4	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
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	183	182	1365	412	254	2038
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	0.97
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	3759
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	3759
Peak-hour factor, PHF	0.92	0.92	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	199	198	1484	448	276	2215
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	19	0	0	18
Lane Group Flow (vph)	411	585	0	1037	746	0	0	397	1913	0	276	2860
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	1930
v/s Ratio Prot	0.11	c0.16		c0.27	0.19			c0.11	0.51		0.07	c0.76
v/s Ratio Perm												
v/c Ratio	0.96	1.24		1.42	0.93			1.75	1.02		1.00	1.48
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			354.6	25.4		52.7	219.6
Delay (s)	99.4	190.3		257.7	75.9			425.1	62.9		122.2	256.1
Level of Service	F	F		F	E			F	E		F	F
Approach Delay (s)		153.8			181.5				124.7			244.3
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	186.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		

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 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)	51	0	27	0	0	0	0	1081	79	29	1020	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)	55	0	29	0	0	0	0	1175	86	32	1109	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1835	2390	630	1759	2433	554	1109			1261		
vC1, stage 1 conf vol	1218	1218		1172	1172							
vC2, stage 2 conf vol	617	1172		588	1261							
vCu, unblocked vol	1835	2390	630	1759	2433	554	1109			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 %	60	100	93	100	100	100	100			94		
cM capacity (veh/h)	137	129	424	137	117	476	626			547		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	85	0	0	783	478	32	739	370
Volume Left	55	0	0	0	0	32	0	0
Volume Right	29	0	0	0	86	0	0	0
cSH	179	1700	1700	1700	1700	547	1700	1700
Volume to Capacity	0.47	0.00	0.00	0.46	0.28	0.06	0.43	0.22
Queue Length 95th (ft)	57	0	0	0	0	5	0	0
Control Delay (s)	42.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0
Lane LOS	E	A				B		
Approach Delay (s)	42.0	0.0	0.0			0.3		
Approach LOS	E	A						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

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	464	286	0	0	0	0	0	0	781	138	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	150	0
Approach Volume (veh/h)		815			0			0			999	
Crossing Volume (veh/h)		999			0			1353#			0	
High Capacity (veh/h)		623			1385			465			1385	
High v/c (veh/h)		1.31			0.00			0.00			0.72	
Low Capacity (veh/h)		483			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	99.1%	ICU Level of Service	F

Crossing flow exceeds 1200, method is not applicable

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	58	222	0	0	0	0	0	860	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	935	153
Approach Volume (veh/h)		0			304			0			935	
Crossing Volume (veh/h)		998			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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	545	672	0	0	0	0	0	568	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	617	403	0	0	0
RTOR Reduction (vph)	0	83	0	0	0	0	0	61	0	0	0	0
Lane Group Flow (vph)	0	1239	0	0	0	0	0	959	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	60.4%	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	0	0	0	63	505	210	987	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	1073	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	78	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	598	0	0	1223	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	0.52		
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	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (vph)	15	554	519	0	52	957
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	602	564	0	57	1040
RTOR Reduction (vph)	0	209	0	0	0	0
Lane Group Flow (vph)	16	393	564	0	57	1040
Turn Type		Prot			Prot	
Protected Phases	2	2	4		3	8
Permitted Phases						
Actuated Green, G (s)	14.0	14.0	18.0		2.0	24.0
Effective Green, g (s)	14.0	14.0	18.0		2.0	24.0
Actuated g/C Ratio	0.30	0.30	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)	593	530	802		85	2031
v/s Ratio Prot	0.01	c0.23	c0.28		0.03	c0.27
v/s Ratio Perm						
v/c Ratio	0.03	0.74	0.70		0.67	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		18.8	0.2
Delay (s)	11.2	19.9	14.6		40.5	7.4
Level of Service	B	B	B		D	A
Approach Delay (s)	19.7		14.6			9.1
Approach LOS	B		B			A

Intersection Summary

HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	46.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	55	0	0	48	0	524	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		4.0			
Lane Util. Factor	1.00	1.00			1.00		1.00		1.00			
Frt	1.00	1.00			1.00		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1947	2049			2049		1947		1742			
Flt Permitted	0.72	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1482	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)	5	60	0	0	52	0	570	0	137	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	66	0	0	0
Lane Group Flow (vph)	5	60	0	0	52	0	570	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			6.5		15.7		15.7			
Effective Green, g (s)	6.5	6.5			6.5		15.7		15.7			
Actuated g/C Ratio	0.22	0.22			0.22		0.52		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)	319	441			441		1012		906			
v/s Ratio Prot		c0.03			0.03		c0.29					
v/s Ratio Perm	0.00								0.04			
v/c Ratio	0.02	0.14			0.12		0.56		0.08			
Uniform Delay, d1	9.3	9.6			9.5		4.9		3.6			
Progression Factor	1.00	1.00			1.00		1.00		1.00			
Incremental Delay, d2	0.0	0.1			0.1		0.7		0.0			
Delay (s)	9.4	9.7			9.7		5.6		3.7			
Level of Service	A	A			A		A		A			
Approach Delay (s)		9.7			9.7			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)	30.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	656	192	18	100	0	0	433	34	56	532	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			0.99		1.00	0.98	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1979		1947	2049			2027		1947	2004	
Flt Permitted		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1979		1947	2049			2027		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	471	37	61	578	99
RTOR Reduction (vph)	0	10	0	0	0	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	912	0	20	109	0	0	505	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)		45.2		1.5	50.7			28.9		3.9	36.8	
Effective Green, g (s)		45.2		1.5	50.7			28.9		3.9	36.8	
Actuated g/C Ratio		0.47		0.02	0.53			0.30		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)		937		31	1088			613		80	772	
v/s Ratio Prot		c0.46		c0.01	0.05			0.25		0.03	c0.34	
v/s Ratio Perm												
v/c Ratio		0.97		0.65	0.10			0.82		0.76	0.87	
Uniform Delay, d1		24.6		46.7	11.1			30.9		45.3	27.1	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		22.9		37.9	0.0			8.8		34.2	10.3	
Delay (s)		47.5		84.6	11.1			39.8		79.5	37.4	
Level of Service		D		F	B			D		E	D	
Approach Delay (s)		47.5			22.5			39.8			40.9	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	95.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	759	0	420	185	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)	825	0	457	201	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	825	0	457	201	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	23.0		15.7	15.7		
Effective Green, g (s)	23.0		15.7	15.7		
Actuated g/C Ratio	0.49		0.34	0.34		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	959		522	689		
v/s Ratio Prot	c0.42			0.10		
v/s Ratio Perm			c0.29			
v/c Ratio	0.86		0.88	0.29		
Uniform Delay, d1	10.4		14.6	11.4		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	8.0		15.1	0.2		
Delay (s)	18.4		29.7	11.6		
Level of Service	B		C	B		
Approach Delay (s)	18.4			24.2	0.0	
Approach LOS	B			C	A	

Intersection Summary

HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	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)	0	171	21	115	122	0	0	0	0	202	716	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	778	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	784	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					28.2	28.2	
Effective Green, g (s)		11.7			13.0					28.2	28.2	
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)		364			401					846	889	
v/s Ratio Prot		c0.10			c0.13					0.11	c0.38	
v/s Ratio Perm												
v/c Ratio		0.56			0.64					0.26	0.88	
Uniform Delay, d1		24.2			23.8					11.7	16.8	
Progression Factor		1.00			1.00					1.00	1.00	
Incremental Delay, d2		1.9			3.5					0.2	10.3	
Delay (s)		26.1			27.3					11.9	27.1	
Level of Service		C			C					B	C	
Approach Delay (s)		26.1			27.3			0.0			23.8	
Approach LOS		C			C			A			C	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	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)	0	444	230	0	0	0	0	0	0	760	693	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	2040	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		1955								1947	2040	
Peak-hour factor, PHF	0.92	0.92	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	826	753	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	826	774	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		47.0								55.7	55.7	
Effective Green, g (s)		47.0								55.7	55.7	
Actuated g/C Ratio		0.42								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)		830								980	1026	
v/s Ratio Prot		c0.37								c0.42	0.38	
v/s Ratio Perm												
v/c Ratio		0.87								0.84	0.75	
Uniform Delay, d1		29.0								23.7	22.0	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		9.5								6.7	3.2	
Delay (s)		38.5								30.4	25.2	
Level of Service		D								C	C	
Approach Delay (s)		38.5			0.0			0.0			27.9	
Approach LOS		D			A			A			C	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.2%	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)	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)	0	221	40	239	44	0	0	0	0	388	1086	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	1180	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	1194	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)		15.9		12.0	31.9					51.0	51.0	
Effective Green, g (s)		15.9		12.0	31.9					51.0	51.0	
Actuated g/C Ratio		0.17		0.13	0.35					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)		350		257	719					1092	1147	
v/s Ratio Prot		c0.14		c0.13	0.02					0.22	c0.58	
v/s Ratio Perm												
v/c Ratio		0.79		1.01	0.07					0.39	1.04	
Uniform Delay, d1		35.9		39.5	19.6					11.2	20.0	
Progression Factor		1.00		1.00	1.00					1.00	1.00	
Incremental Delay, d2		11.3		59.2	0.0					0.2	37.7	
Delay (s)		47.2		98.6	19.6					11.4	57.7	
Level of Service		D		F	B					B	E	
Approach Delay (s)		47.2			86.3			0.0			45.6	
Approach LOS		D			F			A			D	

Intersection Summary

HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	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)	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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	483	808	650	40	20	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3860		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3860		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	525	878	707	43	22	389
RTOR Reduction (vph)	0	0	7	0	0	330
Lane Group Flow (vph)	525	878	743	0	22	59
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	16.1	34.9	14.8		7.6	7.6
Effective Green, g (s)	16.1	34.9	14.8		7.6	7.6
Actuated g/C Ratio	0.32	0.69	0.29		0.15	0.15
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)	621	2690	1131		293	262
v/s Ratio Prot	c0.27	0.23	c0.19		0.01	
v/s Ratio Perm						c0.03
v/c Ratio	0.85	0.33	0.66		0.08	0.22
Uniform Delay, d1	16.0	3.1	15.6		18.4	18.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	10.3	0.1	1.4		0.1	0.4
Delay (s)	26.3	3.2	17.0		18.5	19.3
Level of Service	C	A	B		B	B
Approach Delay (s)		11.8	17.0		19.3	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	50.5	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

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)				932		
pX, platoon unblocked					0.80	
vC, conflicting volume			2338		3649	1169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2338		3814	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		

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)					578							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	1568			1943			2791	3577	972	2605	3572	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1201			1943			2738	3725	972	2503	3719	215
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	42	0	100	99
cM capacity (veh/h)	459			298			7	3	252	0	3	628

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	459	1700	1700	1700	10	0
Volume to Capacity	0.07	0.76	0.61	0.31	52.00	Err
Queue Length 95th (ft)	6	0	0	0	Err	Err
Control Delay (s)	2.1	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	0.7		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		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	219	1542	1251	164	423	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.98		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3517	3478		1770	1583
Flt Permitted		0.51	1.00		0.95	1.00
Satd. Flow (perm)		1816	3478		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	238	1676	1360	178	460	195
RTOR Reduction (vph)	0	0	7	0	0	75
Lane Group Flow (vph)	0	1914	1531	0	460	120
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		111.0	111.0		31.0	31.0
Effective Green, g (s)		111.0	111.0		31.0	31.0
Actuated g/C Ratio		0.74	0.74		0.21	0.21
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)		1344	2574		366	327
v/s Ratio Prot			0.44		c0.26	
v/s Ratio Perm		c1.05				0.08
v/c Ratio		1.42	0.59		1.26	0.37
Uniform Delay, d1		19.5	9.1		59.5	51.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		195.2	0.4		136.0	0.7
Delay (s)		214.7	9.4		195.5	51.8
Level of Service		F	A		F	D
Approach Delay (s)		214.7	9.4		152.7	
Approach LOS		F	A		F	

Intersection Summary

HCM Average Control Delay	128.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	122.2%	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)	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
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	693	691	478	304	0	0	0	0	1100	0	491
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						1725	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3274		1770	3539						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)	0	753	751	520	330	0	0	0	0	1196	0	534
RTOR Reduction (vph)	0	120	0	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	1384	0	520	330	0	0	0	0	0	1719	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						874	
v/s Ratio Prot		c0.42		c0.29	0.09							
v/s Ratio Perm											1.00	
v/c Ratio		1.67		1.84	0.21						1.97	
Uniform Delay, d1		56.0		63.0	25.9						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		306.5		390.3	0.1						439.3	
Delay (s)		362.5		453.3	26.0						476.3	
Level of Service		F		F	C						F	
Approach Delay (s)		362.5			287.4			0.0			476.3	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	395.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	178.8%	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	1325	0	0	634	188	155	0	342	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	1440	0	0	689	204	168	0	372	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	0	41	0	0
Lane Group Flow (vph)	486	1440	0	0	854	0	0	168	331	0	0
Turn Type	Prot						Perm		Perm		
Protected Phases	7	4			8			2			
Permitted Phases							2		2		
Actuated Green, G (s)	20.9	43.7			18.8			16.2	16.2		
Effective Green, g (s)	20.9	43.7			18.8			16.2	16.2		
Actuated g/C Ratio	0.31	0.64			0.28			0.24	0.24		
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)	545	2278			946			422	378		
v/s Ratio Prot	c0.27	0.41			c0.25						
v/s Ratio Perm								0.09	c0.21		
v/c Ratio	0.89	0.63			0.90			0.40	0.88		
Uniform Delay, d1	22.4	7.3			23.7			21.7	24.9		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	16.7	0.6			11.7			0.6	19.6		
Delay (s)	39.1	7.8			35.4			22.4	44.5		
Level of Service	D	A			D			C	D		
Approach Delay (s)		15.7			35.4			37.6		0.0	
Approach LOS		B			D			D		A	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	178.8%	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	1540	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	1674	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				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	950			1680			2547	2988	840	2115	2950	475
vC1, stage 1 conf vol							1942	1942		1004	1004	
vC2, stage 2 conf vol							604	1046		1111	1946	
vCu, unblocked vol	950			1239			2395	2984	118	1819	2933	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			89			97	100	99	59	100	86
cM capacity (veh/h)	719			418			63	77	683	171	51	536

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	133	1116	564	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	418	1700	1700	231	171	536
Volume to Capacity	0.18	0.66	0.33	0.11	0.34	0.22	0.05	0.41	0.14
Queue Length 95th (ft)	17	0	0	10	0	0	4	45	12
Control Delay (s)	11.1	0.0	0.0	14.7	0.0	0.0	21.3	39.6	12.8
Lane LOS	B			B			C	E	B
Approach Delay (s)	0.8			0.7			21.3	25.7	
Approach LOS							C	D	

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
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	1147	645	251	491	0	220	18	155	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	534	0	239	20	168	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	534			1948			1724	3027	267	2420	2677	974
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	534			1948			1724	3027	267	2420	2677	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	77	0	100	91
cM capacity (veh/h)	1030			297			10	1	731	0	2	251

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	831	1117	451	356	427	33
Volume Left	0	0	273	0	239	11
Volume Right	0	701	0	0	168	22
cSH	1700	1700	297	1700	10	0
Volume to Capacity	0.49	0.66	0.92	0.21	42.66	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		40.4		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	112.6%	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	1478	0	0	524	163	228	0	445	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	1607	0	0	570	177	248	0	484	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			1607			2361	2823	803	1931	2734
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	747			1607			2361	2823	803	1931	2734
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			403			15	13	326	0	15

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	770	1071	380	367	248	484
Volume Left	235	0	0	0	248	0
Volume Right	0	0	0	177	0	484
cSH	857	1700	1700	1700	15	326
Volume to Capacity	0.27	0.63	0.22	0.22	16.84	1.48
Queue Length 95th (ft)	28	0	0	0	Err	663
Control Delay (s)	6.3	0.0	0.0	0.0	Err	262.9
Lane LOS	A				F	F
Approach Delay (s)	2.6		0.0		3561.3	
Approach LOS					F	

Intersection Summary			
Average Delay	786.2		
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

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

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	1069	820	8	678	55	283	43	7	34	120	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			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1842			1782			1680	
Flt Permitted	0.22	1.00	1.00	0.22	1.00			0.39			0.96	
Satd. Flow (perm)	414	1863	1583	414	1842			717			1621	
Peak-hour factor, PHF	0.92	0.92	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	47	8	37	130	396
RTOR Reduction (vph)	0	0	442	0	7	0	0	2	0	0	55	0
Lane Group Flow (vph)	490	1162	449	9	790	0	0	361	0	0	508	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			303			684	
v/s Ratio Prot		0.62			0.43							
v/s Ratio Perm	c1.18		0.28	0.02				c0.50			0.31	
v/c Ratio	2.95	1.56	0.71	0.05	1.07			1.19			0.74	
Uniform Delay, d1	13.5	13.5	11.3	8.3	13.5			13.0			10.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	894.4	258.4	3.6	0.1	54.3			114.4			4.4	
Delay (s)	907.9	271.9	14.9	8.4	67.8			127.4			15.3	
Level of Service	F	F	B	A	E			F			B	
Approach Delay (s)		304.4			67.1			127.4			15.3	
Approach LOS		F			E			F			B	

Intersection Summary

HCM Average Control Delay	206.6	HCM Level of Service	F
HCM Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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 & 41 NB Off-Ramp

4/10/2012

Movement	SBL2	SBL	SBR	NWL	NWR	NWR2	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop		Stop				Stop			Stop	
Volume (vph)	92	275	0	0	495	118	271	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	299	0	0	538	128	295	66	122	0	0	0

Direction, Lane #	SB 1	SB 2	NW 1	NW 2	NE 1	NE 2
Volume Total (vph)	200	199	359	308	328	155
Volume Left (vph)	100	0	0	0	295	0
Volume Right (vph)	0	0	0	128	0	122
Hadj (s)	0.28	0.03	0.03	-0.26	0.48	-0.52
Departure Headway (s)	7.6	7.3	7.0	6.7	7.7	6.7
Degree Utilization, x	0.42	0.41	0.70	0.57	0.70	0.29
Capacity (veh/h)	458	474	502	518	446	513
Control Delay (s)	14.8	14.0	23.2	17.0	25.9	11.2
Approach Delay (s)	14.4		20.3		21.2	
Approach LOS	B		C		C	

Intersection Summary			
Delay	19.1		
HCM Level of Service	C		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/10/2012

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					0.98	
vC, conflicting volume	130				902	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130				891	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				307	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	307	919
Volume to Capacity	0.45	0.08	0.95	0.90
Queue Length 95th (ft)	0	0	236	317
Control Delay (s)	0.0	0.0	76.0	31.8
Lane LOS			F	D
Approach Delay (s)	0.0	0.0	43.3	
Approach LOS			E	

Intersection Summary			
Average Delay	24.0		
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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	197	591	275	488	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	214	642	299	530	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				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	530			857			1754	1664	535	1664	1985	265
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	530			748			1797	1691	372	1691	2067	265
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			59			0	100	100	0	0	0
cM capacity (veh/h)	1033			733			0	47	535	35	27	733

Direction, Lane #	SE 1	NW 1	NW 2	SW 1	SW 2
Volume Total	857	476	354	1062	502
Volume Left	0	299	0	99	0
Volume Right	642	0	0	251	502
cSH	1700	733	1700	36	733
Volume to Capacity	0.50	0.41	0.21	29.31	0.69
Queue Length 95th (ft)	0	50	0	Err	137
Control Delay (s)	0.0	10.6	0.0	Err	19.9
Lane LOS		B		F	C
Approach Delay (s)	0.0	6.1		6795.1	
Approach LOS				F	

Intersection Summary			
Average Delay	3271.9		
Intersection Capacity Utilization	131.8%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	160	6	535	0	0	0	0	1073	183	442	1261	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		301	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	1166	199	480	1371	0
RTOR Reduction (vph)	0	75	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	174	514	0	0	0	0	0	1356	0	480	1371	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		222	2614	
v/s Ratio Prot	0.10	c0.32						0.39			0.39	
v/s Ratio Perm										c1.60		
v/c Ratio	0.49	1.63						0.53		2.16	0.52	
Uniform Delay, d1	53.4	60.1						8.4		19.6	8.4	
Progression Factor	1.00	1.00						1.00		1.00	1.00	
Incremental Delay, d2	2.4	299.0						0.1		537.6	0.1	
Delay (s)	55.8	359.1						8.5		557.2	8.4	
Level of Service	E	F						A		F	A	
Approach Delay (s)		290.0			0.0			8.5			150.8	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	128.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.4
Intersection Capacity Utilization	105.6%	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

4/10/2012

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	917	0	0	1330	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	997	0	0	1446	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	3258	3347	945	2402	3568	498	1889			997		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2612	2717	396	1612	2976	122	1593			695		
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	476	0	0	788	322			779		

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2
Volume Total	329	409	341	498	498	964	925
Volume Left	326	0	341	0	0	0	0
Volume Right	0	407	0	0	0	0	443
cSH	0	0	322	1700	1700	1700	1700
Volume to Capacity	Err	Err	1.06	0.29	0.29	0.57	0.54
Queue Length 95th (ft)	Err	Err	315	0	0	0	0
Control Delay (s)	Err	Err	104.0	0.0	0.0	0.0	0.0
Lane LOS	F	F	F				
Approach Delay (s)	Err		26.5			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

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

4/10/2012

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	998	82	6	1238	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	1085	89	7	1346	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	0.78	0.78	0.73	0.78	0.78	0.90	0.73			0.90		
vC, conflicting volume	2767	3145	689	2515	3116	587	1378			1174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2149	2635	0	1823	2598	333	773			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	40	87	0	0	72	51			99		
cM capacity (veh/h)	0	9	790	11	10	599	610			632		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	142	614	840	632	679	705
Volume Left	36	272	298	0	7	0
Volume Right	101	166	0	89	0	33
cSH	0	14	610	1700	632	1700
Volume to Capacity	Err	43.05	0.49	0.37	0.01	0.41
Queue Length 95th (ft)	Err	Err	67	0	1	0
Control Delay (s)	Err	Err	13.4	0.0	0.3	0.0
Lane LOS	F	F	B		A	
Approach Delay (s)	Err	Err	7.6		0.1	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	273	769	154	281	386	64	202	648	351	123	895	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	0.98		1.00	0.98		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	3451		1770	1823		1770	3352		1770	3452	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3451		1770	1823		1770	3352		1770	3452	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	836	167	305	420	70	220	704	382	134	973	191
RTOR Reduction (vph)	0	12	0	0	5	0	0	54	0	0	12	0
Lane Group Flow (vph)	297	991	0	305	485	0	220	1032	0	134	1152	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	777		412	424		131	1137		105	1120	
v/s Ratio Prot	0.17	c0.29		0.17	c0.27		c0.12	0.31		0.08	c0.33	
v/s Ratio Perm												
v/c Ratio	0.74	1.27		0.74	1.14		1.68	0.91		1.28	1.03	
Uniform Delay, d1	48.7	52.3		48.0	51.8		62.5	42.6		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	6.5	133.7		6.2	89.6		336.6	10.3		179.2	34.4	
Delay (s)	55.2	186.0		54.2	141.4		399.1	52.9		242.7	80.0	
Level of Service	E	F		D	F		F	D		F	F	
Approach Delay (s)		156.1			107.9			111.2			96.8	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	119.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	155	495	101	480	506	176	58	862	171	97	707	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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	3449		1770	3402		1770	3451		1770	3480	
Flt Permitted	0.31	1.00		0.35	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	576	3449		656	3402		1770	3451		1770	3480	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	538	110	522	550	191	63	937	186	105	768	97
RTOR Reduction (vph)	0	11	0	0	23	0	0	11	0	0	6	0
Lane Group Flow (vph)	168	637	0	522	718	0	63	1112	0	105	859	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	41.3		12.2	43.9	
Effective Green, g (s)	84.8	84.8		84.8	84.8		9.6	41.3		12.2	43.9	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.06	0.27		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)	324	1941		369	1914		113	946		143	1014	
v/s Ratio Prot		0.18			0.21		0.04	c0.32		0.06	c0.25	
v/s Ratio Perm	0.29			c0.80								
v/c Ratio	0.52	0.33		1.41	0.38		0.56	1.18		0.73	0.85	
Uniform Delay, d1	20.3	17.7		32.9	18.3		68.5	54.7		67.7	50.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.2		202.0	0.2		3.4	90.2		15.4	7.3	
Delay (s)	22.9	17.9		234.9	18.5		71.8	144.9		83.1	57.5	
Level of Service	C	B		F	B		E	F		F	E	
Approach Delay (s)		18.9			107.9			141.0			60.3	
Approach LOS		B			F			F			E	

Intersection Summary

HCM Average Control Delay	89.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	155	1766	46	0	0	0	0	1131	48	73	916	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)	168	1920	50	0	0	0	0	1229	52	79	996	0
RTOR Reduction (vph)	0	0	20	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2088	30	0	0	0	0	1279	0	79	996	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	0.67	
Uniform Delay, d1		16.7	10.0					16.9		15.1	15.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		6.7	0.0					5.2		12.3	0.9	
Delay (s)		23.5	10.0					22.1		27.4	15.8	
Level of Service		C	B					C		C	B	
Approach Delay (s)		23.2			0.0			22.1			16.7	
Approach LOS		C			A			C			B	

Intersection Summary

HCM Average Control Delay	21.3	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	101.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	183	303	162	98	265	47	58	1148	70	67	760	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	107	288	51	63	1248	76	73	826	51
RTOR Reduction (vph)	0	0	65	0	0	41	0	0	32	0	0	30
Lane Group Flow (vph)	199	329	111	107	288	10	63	1248	44	73	826	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	1.14	0.09	0.43	0.75	0.04
Uniform Delay, d1	33.0	35.5	31.5	30.9	35.4	30.1	40.1	32.6	23.2	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	73.8	0.2	0.6	3.5	0.1
Delay (s)	35.4	50.1	32.6	31.1	44.9	30.2	40.6	106.5	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			39.9			98.9			33.0	
Approach LOS		D			D			F			C	

Intersection Summary

HCM Average Control Delay	61.8	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	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	31	168	254	231	1153	0	0	845	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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)					3512	1583	1770	3539			3539	1583
Flt Permitted					0.99	1.00	0.28	1.00			1.00	1.00
Satd. Flow (perm)					3512	1583	519	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	34	183	276	251	1253	0	0	918	482
RTOR Reduction (vph)	0	0	0	0	0	60	0	0	0	0	0	164
Lane Group Flow (vph)	0	0	0	0	217	216	251	1253	0	0	918	318
Turn Type				Split		Perm	Perm					Perm
Protected Phases				8	8			2			6	
Permitted Phases						8	2					6
Actuated Green, G (s)					13.7	13.7	37.8	37.8			37.8	37.8
Effective Green, g (s)					13.7	13.7	37.8	37.8			37.8	37.8
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)					803	362	328	2233			2233	999
v/s Ratio Prot					0.06			0.35			0.26	
v/s Ratio Perm						c0.14	c0.48					0.20
v/c Ratio					0.27	0.60	0.77	0.56			0.41	0.32
Uniform Delay, d1					19.0	20.6	7.9	6.3			5.5	5.1
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					0.1	1.8	9.2	0.2			0.0	0.1
Delay (s)					19.1	22.4	17.1	6.5			5.6	5.2
Level of Service					B	C	B	A			A	A
Approach Delay (s)		0.0			20.9			8.3			5.4	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.4
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1564	17	39	1322	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	1700	18	42	1437	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	1717	0	42	1437	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	c0.34		0.02	0.28			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	2.6		1.6	6.6	3.4	0.0	0.0		109.6	0.1	0.1
Delay (s)	179.2	26.7		44.2	36.4	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)		50.2			35.1			18.5			66.4	
Approach LOS		D			D			B			E	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	8.6
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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						
vC, conflicting volume			395		1001	395
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			395		1001	395
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)			1164		264	655

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	1164	301
Volume to Capacity	0.23	0.02	0.12
Queue Length 95th (ft)	0	2	10
Control Delay (s)	0.0	0.6	18.7
Lane LOS		A	C
Approach Delay (s)	0.0	0.6	18.7
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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	540	211	0	0	109	89	0	63	0	91	27	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	15	12	12	15	15	15	12	15	12
Total Lost time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1770	3539			3539	1583		2049			1973	1583
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.74	1.00
Satd. Flow (perm)	1770	3539			3539	1583		2049			1516	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)	587	229	0	0	118	97	0	68	0	99	29	565
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	0	0	0	429
Lane Group Flow (vph)	587	229	0	0	118	14	0	68	0	0	128	136
Turn Type	Prot					Perm	Perm			Prot		custom
Protected Phases	5	2			6			4		3	8	
Permitted Phases						6	4					4
Actuated Green, G (s)	29.1	42.6			9.5	9.5		16.2			16.4	16.2
Effective Green, g (s)	29.1	42.6			9.5	9.5		16.2			16.4	16.2
Actuated g/C Ratio	0.43	0.63			0.14	0.14		0.24			0.24	0.24
Clearance Time (s)	4.0	4.2			4.2	4.2		4.2			4.0	4.2
Vehicle Extension (s)	3.0	4.8			4.8	4.8		2.0			3.0	2.0
Lane Grp Cap (vph)	766	2243			500	224		494			370	382
v/s Ratio Prot	c0.33	0.06			c0.03			0.03				
v/s Ratio Perm						0.01					0.08	c0.09
v/c Ratio	0.77	0.10			0.24	0.06		0.14			0.35	0.36
Uniform Delay, d1	16.2	4.8			25.6	25.0		20.0			21.0	21.2
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.6	0.0			0.5	0.2		0.0			0.6	0.2
Delay (s)	20.8	4.9			26.1	25.2		20.1			21.5	21.4
Level of Service	C	A			C	C		C			C	C
Approach Delay (s)		16.3			25.7			20.1			21.4	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	12.4
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	84	425	126	94	361	114	104	265	114	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	0.95		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	3418		1770	3412		1770	1779		1770	1776	
Flt Permitted	0.44	1.00		0.38	1.00		0.17	1.00		0.39	1.00	
Satd. Flow (perm)	812	3418		715	3412		318	1779		721	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	137	102	392	124	113	288	124	108	447	200
RTOR Reduction (vph)	0	47	0	0	52	0	0	26	0	0	26	0
Lane Group Flow (vph)	91	552	0	102	464	0	113	386	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		23.4	23.4		23.4	23.4	
Effective Green, g (s)	26.0	26.0		26.0	26.0		23.4	23.4		23.4	23.4	
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)	365	1538		322	1535		129	720		292	719	
v/s Ratio Prot		c0.16			0.14			0.22			0.35	
v/s Ratio Perm	0.11			0.14			c0.35			0.15		
v/c Ratio	0.25	0.36		0.32	0.30		0.88	0.54		0.37	0.86	
Uniform Delay, d1	9.9	10.4		10.2	10.1		15.9	13.1		12.0	15.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.2	0.0		42.7	0.4		0.3	10.2	
Delay (s)	10.0	10.5		10.4	10.2		58.6	13.5		12.3	25.9	
Level of Service	A	B		B	B		E	B		B	C	
Approach Delay (s)		10.4			10.2			23.2			24.0	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	57.8	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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	109	1367	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	1486	274	0	0	0	0	317	320	88	425	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1835	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		0.89						0.87		0.62	0.55	
Uniform Delay, d1		14.8						14.6		12.5	12.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		4.8						10.8		5.4	0.4	
Delay (s)		19.6						25.5		18.0	12.5	
Level of Service		B						C		B	B	
Approach Delay (s)		19.6			0.0			25.5			13.4	
Approach LOS		B			A			C			B	

Intersection Summary

HCM Average Control Delay	19.8	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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	283	561	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	610	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	651			0			934	1266	0	1259	1246	326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	651			0			934	1266	0	1259	1246	326
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)	931			1622			168	136	1084	92	140	670

Direction, Lane #	NW 1	NW 2	NE 1	NE 2	SW 1
Volume Total	612	346	110	27	24
Volume Left	308	0	110	0	0
Volume Right	0	41	0	0	4
cSH	1622	1700	168	136	163
Volume to Capacity	0.19	0.20	0.65	0.20	0.15
Queue Length 95th (ft)	17	0	94	18	13
Control Delay (s)	4.8	0.0	60.0	38.0	30.8
Lane LOS	A		F	E	D
Approach Delay (s)	3.1		55.6		30.8
Approach LOS			F		D

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	224	104	234	289	153	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.8			4.8	4.8	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.95			1.00	0.93	
Flt Protected	1.00			0.98	0.98	
Satd. Flow (prot)	3371			3462	1693	
Flt Permitted	1.00			0.71	0.98	
Satd. Flow (perm)	3371			2508	1693	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	113	254	314	166	173
RTOR Reduction (vph)	72	0	0	0	65	0
Lane Group Flow (vph)	284	0	0	568	274	0
Turn Type			Perm			
Protected Phases	2			2		
Permitted Phases			2		4	
Actuated Green, G (s)	10.4			10.4	8.4	
Effective Green, g (s)	10.4			10.4	8.4	
Actuated g/C Ratio	0.37			0.37	0.30	
Clearance Time (s)	4.8			4.8	4.8	
Vehicle Extension (s)	0.2			0.2	0.2	
Lane Grp Cap (vph)	1234			918	501	
v/s Ratio Prot	0.08					
v/s Ratio Perm				c0.23	c0.16	
v/c Ratio	0.23			0.62	0.55	
Uniform Delay, d1	6.2			7.4	8.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.9	0.7	
Delay (s)	6.3			8.3	9.1	
Level of Service	A			A	A	
Approach Delay (s)	6.3			8.3	9.1	
Approach LOS	A			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)	28.4	Sum of lost time (s)	9.6
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

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			479		
pX, platoon unblocked			0.95		0.95	0.95
vC, conflicting volume			780		1141	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			656		1036	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 %			95		42	88
cM capacity (veh/h)			878		205	717

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	878	1700	291
Volume to Capacity	0.28	0.18	0.05	0.24	0.70
Queue Length 95th (ft)	0	0	4	0	120
Control Delay (s)	0.0	0.0	2.0	0.0	41.5
Lane LOS			A		E
Approach Delay (s)	0.0		0.8		41.5
Approach LOS					E

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	277	74	255	71	341	79	52	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)		838			1542		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	277	77	371	86	57	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	647	0	0	529	0	57	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		0.58			0.04		
v/c Ratio		1.94			0.86		1.08	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		432.0			11.4		146.3	0.1		0.0	362.9	
Delay (s)		474.1			50.0		178.4	19.7		15.3	395.0	
Level of Service		F			D		F	B		B	F	
Approach Delay (s)		474.1			50.0			37.1			389.3	
Approach LOS		F			D			D			F	

Intersection Summary

HCM Average Control Delay	301.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	160.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	296	121	228	102	211	102	125	480	147	154	1313	528
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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		0.95			0.97		1.00	0.96		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1734			1779		1770	1797		1770	1783	
Flt Permitted		0.43			0.78		0.04	1.00		0.35	1.00	
Satd. Flow (perm)		758			1396		69	1797		647	1783	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	322	132	248	111	229	111	136	522	160	167	1427	574
RTOR Reduction (vph)	0	14	0	0	8	0	0	8	0	0	10	0
Lane Group Flow (vph)	0	688	0	0	443	0	136	674	0	167	1991	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)		129			237		53	1384		498	1373	
v/s Ratio Prot								0.38			1.12	
v/s Ratio Perm		c0.91			0.32		c1.97			0.26		
v/c Ratio		5.33			1.87		2.57	0.49		0.34	1.45	
Uniform Delay, d1		58.1			58.1		16.1	5.9		5.0	16.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1966.6			406.3		756.6	0.1		0.1	206.6	
Delay (s)		2024.7			464.4		772.7	6.0		5.1	222.7	
Level of Service		F			F		F	A		A	F	
Approach Delay (s)		2024.7			464.4			133.5			205.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	528.2	HCM Level of Service	F
HCM Volume to Capacity ratio	3.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	198.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	189	456	197	187	400	245	88	781	131	218	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	0.94		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3379		1770	3338		1770	3463		1770	3476	
Flt Permitted	0.24	1.00		0.23	1.00		0.06	1.00		0.22	1.00	
Satd. Flow (perm)	446	3379		436	3338		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	496	214	203	435	266	96	849	142	237	1800	243
RTOR Reduction (vph)	0	11	0	0	84	0	0	12	0	0	10	0
Lane Group Flow (vph)	205	699	0	203	617	0	96	979	0	237	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)	152	1152		149	1138		68	2009		241	2016	
v/s Ratio Prot		0.21			0.18			0.28			0.58	
v/s Ratio Perm	0.46			c0.47			c0.82			0.57		
v/c Ratio	1.35	0.61		1.36	0.54		1.41	0.49		0.98	1.01	
Uniform Delay, d1	36.2	30.1		36.2	29.3		23.1	13.5		22.6	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	194.0	0.6		200.1	0.3		252.0	0.1		52.8	22.2	
Delay (s)	230.2	30.8		236.4	29.6		275.1	13.6		75.4	45.3	
Level of Service	F	C		F	C		F	B		E	D	
Approach Delay (s)		75.4			76.0			36.7			48.4	
Approach LOS		E			E			D			D	

Intersection Summary

HCM Average Control Delay	55.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.40		
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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	110	399	231	348	450	94	195	880	156	139	1354	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	0.97		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	1760		1770	3448		1770	3459		1770	3468	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1760		1770	3448		1770	3459		1770	3468	
Peak-hour factor, PHF	0.92	0.92	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	251	378	489	102	212	957	170	151	1472	229
RTOR Reduction (vph)	0	14	0	0	11	0	0	10	0	0	8	0
Lane Group Flow (vph)	120	671	0	378	580	0	212	1117	0	151	1693	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	43.8		25.0	54.8		10.0	52.8		12.0	54.8	
Effective Green, g (s)	14.0	43.8		25.0	54.8		10.0	52.8		12.0	54.8	
Actuated g/C Ratio	0.09	0.29		0.17	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	514		295	1260		118	1218		142	1267	
v/s Ratio Prot	0.07	c0.38		c0.21	0.17		c0.12	0.32		0.09	c0.49	
v/s Ratio Perm												
v/c Ratio	0.73	1.31		1.28	0.46		1.80	0.92		1.06	1.34	
Uniform Delay, d1	66.1	53.1		62.5	36.3		70.0	46.5		69.0	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	150.9		150.1	0.6		390.1	11.4		93.4	156.7	
Delay (s)	78.8	204.0		212.6	36.9		460.1	57.9		162.4	204.3	
Level of Service	E	F		F	D		F	E		F	F	
Approach Delay (s)		185.4			105.4			121.6			200.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	158.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	123.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	213	1195	408	0	0	0	0	870	222	238	1263	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					3431		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.16	1.00	
Satd. Flow (perm)		5047	1583					3431		294	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	946	241	259	1373	0
RTOR Reduction (vph)	0	0	22	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1531	421	0	0	0	0	1185	0	259	1373	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					1804		155	1861	
v/s Ratio Prot		c0.30						0.35			0.39	
v/s Ratio Perm			0.27							c0.88		
v/c Ratio		0.94	0.82					0.66		1.67	0.74	
Uniform Delay, d1		19.7	18.7					10.3		14.2	11.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		10.4	9.7					0.7		328.5	1.3	
Delay (s)		30.0	28.4					11.0		342.7	12.3	
Level of Service		C	C					B		F	B	
Approach Delay (s)		29.7			0.0			11.0			64.8	
Approach LOS		C			A			B			E	

Intersection Summary

HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	84	568	95	163	1298	0	0	1226	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	0.13	1.00			1.00	1.00
Satd. Flow (perm)				1770	1863	1583	243	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	91	617	103	177	1411	0	0	1333	200
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	0	91	617	84	177	1411	0	0	1333	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	142	2070			2070	926
v/s Ratio Prot				0.05	c0.33			0.40			0.38	
v/s Ratio Perm						0.05	c0.73					0.11
v/c Ratio				0.17	1.07	0.17	1.25	0.68			0.64	0.18
Uniform Delay, d1				20.1	27.6	20.1	16.6	11.5			11.1	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	156.4	1.2			1.0	0.2
Delay (s)				20.2	84.3	20.3	173.0	12.7			12.0	7.9
Level of Service				C	F	C	F	B			B	A
Approach Delay (s)		0.0			69.0			30.5			11.5	
Approach LOS		A			E			C			B	

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	113	421	166	243	370	103	125	986	247	65	995	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	3433		1770	3514	
Flt Permitted	0.39	1.00	1.00	0.33	1.00	1.00	0.14	1.00		0.13	1.00	
Satd. Flow (perm)	734	1863	1583	623	1863	1583	262	3433		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	1072	268	71	1082	53
RTOR Reduction (vph)	0	0	28	0	0	29	0	34	0	0	5	0
Lane Group Flow (vph)	123	458	152	264	402	83	136	1306	0	71	1130	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	121	1584		114	1622	
v/s Ratio Prot		0.25			0.22			0.38			0.32	
v/s Ratio Perm	0.17		0.10	c0.42		0.05	c0.52			0.29		
v/c Ratio	0.42	0.61	0.24	1.05	0.54	0.13	1.12	0.82		0.62	0.70	
Uniform Delay, d1	13.9	15.4	12.8	19.4	14.8	12.2	17.5	15.2		13.2	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	0.3	1.0	0.1	71.1	0.4	0.0	119.0	3.5		7.4	1.1	
Delay (s)	14.3	16.3	12.9	90.5	15.1	12.3	136.5	18.7		20.6	15.0	
Level of Service	B	B	B	F	B	B	F	B		C	B	
Approach Delay (s)		15.2			40.3			29.5			15.3	
Approach LOS		B			D			C			B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	254	486	59	0	0	0	30	965	85	304	999	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	3496		1770	3457	
Flt Permitted		0.98	1.00				0.13	1.00		0.17	1.00	
Satd. Flow (perm)		1831	1583				248	3496		322	3457	
Peak-hour factor, PHF	0.92	0.92	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	1049	92	330	1086	198
RTOR Reduction (vph)	0	0	9	0	0	0	0	7	0	0	15	0
Lane Group Flow (vph)	0	804	55	0	0	0	33	1134	0	330	1269	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				140	1972		182	1950	
v/s Ratio Prot		c0.44						0.32			0.37	
v/s Ratio Perm			0.04				0.13			c1.02		
v/c Ratio		1.28	0.10				0.24	0.58		1.81	0.65	
Uniform Delay, d1		32.8	22.3				11.0	14.1		21.8	15.0	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		136.3	0.0				1.2	0.5		386.8	0.9	
Delay (s)		169.1	22.3				12.2	14.6		408.6	15.9	
Level of Service		F	C				B	B		F	B	
Approach Delay (s)		158.3			0.0			14.5			96.2	
Approach LOS		F			A			B			F	

Intersection Summary

HCM Average Control Delay	84.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	0	1123	0	1244	467	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)		4.1		4.1	4.6	
Lane Util. Factor		0.88		0.95	0.95	
Frt		0.85		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		2787		3539	3539	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		2787		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1221	0	1352	508	0
RTOR Reduction (vph)	0	840	0	0	0	0
Lane Group Flow (vph)	0	381	0	1352	508	0
Turn Type		custom				
Protected Phases				6	4	
Permitted Phases		7				
Actuated Green, G (s)		14.1		22.9	13.6	
Effective Green, g (s)		14.1		22.9	13.6	
Actuated g/C Ratio		0.31		0.51	0.30	
Clearance Time (s)		4.1		4.1	4.6	
Vehicle Extension (s)		1.2		3.0	4.0	
Lane Grp Cap (vph)		869		1793	1065	
v/s Ratio Prot				c0.38	c0.14	
v/s Ratio Perm		0.14				
v/c Ratio		0.44		0.75	0.48	
Uniform Delay, d1		12.4		8.9	12.9	
Progression Factor		1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.8	0.5	
Delay (s)		12.5		10.7	13.4	
Level of Service		B		B	B	
Approach Delay (s)	12.5			10.7	13.4	
Approach LOS	B			B	B	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.2	Sum of lost time (s)	8.7
Intersection Capacity Utilization	59.4%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1157	70	0	734	0	0	0	0	543	1084	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)		3509			3539					1610	3382	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		3509			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	1258	76	0	798	0	0	0	0	590	1178	728
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	1327	0	0	798	0	0	0	0	531	1237	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)		1350			1361					793	1665	779
v/s Ratio Prot		c0.38			0.23							
v/s Ratio Perm										0.33	0.37	c0.44
v/c Ratio		0.98			0.59					0.67	0.74	0.89
Uniform Delay, d1		19.8			15.9					12.5	13.2	14.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		20.4			0.7					2.2	1.8	12.4
Delay (s)		40.2			16.5					14.7	15.0	27.3
Level of Service		D			B					B	B	C
Approach Delay (s)		40.2			16.5			0.0			18.5	
Approach LOS		D			B			A			B	

Intersection Summary

HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	65.0	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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	611	730	0	341	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)	664	793	0	371	214	593
RTOR Reduction (vph)	0	529	0	0	0	33
Lane Group Flow (vph)	664	264	0	371	214	560
Turn Type		Perm				Perm
Protected Phases	6			6	8	
Permitted Phases		6				8
Actuated Green, G (s)	26.6	26.6		26.6	45.2	45.2
Effective Green, g (s)	26.6	26.6		26.6	45.2	45.2
Actuated g/C Ratio	0.33	0.33		0.33	0.57	0.57
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)	1177	526		1177	1000	894
v/s Ratio Prot	c0.19			0.10	0.12	
v/s Ratio Perm		0.17				c0.35
v/c Ratio	0.56	0.50		0.32	0.21	0.63
Uniform Delay, d1	21.9	21.4		19.9	8.6	11.7
Progression Factor	1.00	1.00		0.62	1.00	1.00
Incremental Delay, d2	0.6	0.8		0.1	0.0	1.0
Delay (s)	22.6	22.1		12.5	8.6	12.7
Level of Service	C	C		B	A	B
Approach Delay (s)	22.3			12.5	11.6	
Approach LOS	C			B	B	

Intersection Summary

HCM Average Control Delay	17.7	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	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	981	757	704	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)	1066	823	765	565	0	0
RTOR Reduction (vph)	0	0	0	431	0	0
Lane Group Flow (vph)	1066	823	765	134	0	0
Turn Type	Prot			Perm		
Protected Phases	3	8	4			
Permitted Phases				4		
Actuated Green, G (s)	22.5	45.2	19.0	19.0		
Effective Green, g (s)	22.5	45.2	19.0	19.0		
Actuated g/C Ratio	0.28	0.57	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)	1062	2200	925	414		
v/s Ratio Prot	c0.28	0.21	c0.20			
v/s Ratio Perm				0.08		
v/c Ratio	1.00	0.37	0.83	0.32		
Uniform Delay, d1	28.8	9.6	28.9	25.2		
Progression Factor	1.00	1.00	1.15	2.50		
Incremental Delay, d2	28.5	0.0	5.5	0.6		
Delay (s)	57.3	9.6	38.7	63.6		
Level of Service	E	A	D	E		
Approach Delay (s)		36.5	49.3		0.0	
Approach LOS		D	D		A	

Intersection Summary

HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	38.5
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	566	853	174	138	701	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	3430		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	3430		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	927	189	150	762	198	390	832	52	490	858	189
RTOR Reduction (vph)	0	0	61	0	22	0	0	0	19	0	0	100
Lane Group Flow (vph)	615	927	128	150	938	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	0.70	0.22	0.56	0.99		0.99	0.97	0.09	1.00	0.90	0.21
Uniform Delay, d1	43.5	28.0	22.5	46.7	37.9		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	2.2	0.4	1.4	26.8		43.8	23.4	0.2	40.7	12.5	0.5
Delay (s)	92.6	30.2	22.9	48.1	64.7		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			62.4			69.9			58.7	
Approach LOS		D			E			E			E	

Intersection Summary

HCM Average Control Delay	59.8	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	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	148	956	52	31	459	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	5046			3369			1799			1664	
Flt Permitted	0.31	1.00			0.87			0.81			0.88	
Satd. Flow (perm)	574	5046			2945			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	1039	57	34	499	236	132	160	36	45	9	132
RTOR Reduction (vph)	0	10	0	0	85	0	0	7	0	0	85	0
Lane Group Flow (vph)	161	1086	0	0	684	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)	283	2489			1453			529			526	
v/s Ratio Prot		0.22										
v/s Ratio Perm	c0.28				0.23			c0.22			0.07	
v/c Ratio	0.57	0.44			0.47			0.61			0.19	
Uniform Delay, d1	10.6	9.7			9.9			15.7			13.2	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	1.6	0.0			0.1			1.4			0.1	
Delay (s)	12.1	9.7			10.0			17.1			13.3	
Level of Service	B	A			A			B			B	
Approach Delay (s)		10.0			10.0			17.1			13.3	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	253	99	338	379	189	77	158	1205	50	104	1321	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		190	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	1310	54	113	1436	207
RTOR Reduction (vph)	0	0	23	0	13	0	0	3	0	0	10	0
Lane Group Flow (vph)	275	108	344	412	276	0	172	1361	0	113	1633	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		103	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		1.10	0.86	
Uniform Delay, d1	47.5	37.5	44.1	47.0	40.9		25.1	18.7		25.1	21.6	
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	78.6	288.9	7.0		729.5	1.8		117.3	5.0	
Delay (s)	148.8	37.7	122.7	335.9	47.9		754.6	20.5		142.4	26.6	
Level of Service	F	D	F	F	D		F	C		F	C	
Approach Delay (s)		120.0			217.2			102.7			34.1	
Approach LOS		F			F			F			C	

Intersection Summary

HCM Average Control Delay	97.0	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	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	247	721	790	0	0	0	0	1003	479	390	741	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					3368		1770	3539	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583					3368		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)	268	784	859	0	0	0	0	1090	521	424	805	0
RTOR Reduction (vph)	0	0	124	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	268	784	735	0	0	0	0	1581	0	424	805	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	50.3	50.3	50.3					56.8		27.8	89.8	
Effective Green, g (s)	50.3	50.3	50.3					56.8		27.8	89.8	
Actuated g/C Ratio	0.34	0.34	0.34					0.38		0.19	0.60	
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)	594	625	531					1275		328	2119	
v/s Ratio Prot	0.15	0.42						c0.47		c0.24	0.23	
v/s Ratio Perm			c0.46									
v/c Ratio	0.45	1.25	1.38					1.24		1.29	0.38	
Uniform Delay, d1	39.0	49.9	49.9					46.6		61.1	15.6	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	1.6	127.3	184.1					114.7		152.6	0.0	
Delay (s)	40.7	177.1	233.9					161.3		213.7	15.7	
Level of Service	D	F	F					F		F	B	
Approach Delay (s)		183.5			0.0			161.3			84.0	
Approach LOS		F			A			F			F	

Intersection Summary

HCM Average Control Delay	150.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
38: 99 NB On-Ramp & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	335	511	609	647	594	0	0	786	1003
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	662	703	646	0	0	854	1090
RTOR Reduction (vph)	0	0	0	0	0	253	0	0	0	0	0	18
Lane Group Flow (vph)	0	0	0	0	919	409	703	646	0	0	854	1072
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	36.3	104.8			64.8	64.8
Effective Green, g (s)					34.6	34.6	36.3	104.8			64.8	64.8
Actuated g/C Ratio					0.23	0.23	0.24	0.70			0.43	0.43
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	428	2473			1529	684
v/s Ratio Prot					c0.26		c0.40	0.18			0.24	
v/s Ratio Perm						0.26						c0.68
v/c Ratio					1.15	1.12	1.64	0.26			0.56	1.57
Uniform Delay, d1					57.7	57.7	56.9	8.3			31.9	42.6
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					81.3	83.8	299.5	0.0			0.3	262.2
Delay (s)					139.0	141.5	356.4	8.4			32.1	304.8
Level of Service					F	F	F	A			C	F
Approach Delay (s)		0.0			140.0			189.7			185.0	
Approach LOS		A			F			F			F	

Intersection Summary

HCM Average Control Delay	171.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
40: H St & Fresno

4/11/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	25	722	1247	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	1355	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	1355	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	0.34	
v/s Ratio Perm	0.06		c0.78	0.23			c0.50					
v/c Ratio	0.20	0.63	0.78	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	3.5	17.8	0.7		76.2	0.2		3.2	0.4	
Delay (s)	20.3	23.9	3.5	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)		11.1			25.1			26.0			11.6	
Approach LOS		B			C			C			B	

Intersection Summary

HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	4.0
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

4/10/2012

Movement	SEL	SET	SER	NWL2	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT
Lane Configurations												
Volume (vph)	139	8	63	117	4	90	186	80	636	39	172	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	1675			3493		1770	1863
Flt Permitted	0.32	1.00			0.71	1.00			0.59		0.32	1.00
Satd. Flow (perm)	604	1616			1448	1675			2060		593	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)	151	9	68	127	4	98	202	87	691	42	187	1109
RTOR Reduction (vph)	0	0	0	0	0	95	0	0	3	0	0	0
Lane Group Flow (vph)	151	77	0	0	131	205	0	0	817	0	187	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)	17.2	17.2			17.2	17.2			52.1		52.1	52.1
Effective Green, g (s)	17.2	17.2			17.2	17.2			52.1		52.1	52.1
Actuated g/C Ratio	0.22	0.22			0.22	0.22			0.66		0.66	0.66
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)	132	352			316	365			1360		392	1230
v/s Ratio Prot		0.05				0.12						c0.60
v/s Ratio Perm	c0.25				0.09				0.40		0.32	
v/c Ratio	1.14	0.22			0.41	0.56			0.89dl		0.48	0.90
Uniform Delay, d1	30.9	25.3			26.5	27.5			7.5		6.6	11.2
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	122.2	0.1			0.3	1.2			0.5		0.3	9.1
Delay (s)	153.1	25.4			26.8	28.7			8.1		7.0	20.4
Level of Service	F	C			C	C			A		A	C
Approach Delay (s)		110.0				28.1			8.1			14.6
Approach LOS		F				C			A			B

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	9.6
Intersection Capacity Utilization	114.7%	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	SWR	SWR2
Lane Configurations		
Volume (vph)	37	494
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	537
RTOR Reduction (vph)	182	0
Lane Group Flow (vph)	395	0
Turn Type	Perm	
Protected Phases		
Permitted Phases	2	
Actuated Green, G (s)	52.1	
Effective Green, g (s)	52.1	
Actuated g/C Ratio	0.66	
Clearance Time (s)	4.8	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1150	
v/s Ratio Prot		
v/s Ratio Perm	0.23	
v/c Ratio	0.34	
Uniform Delay, d1	5.9	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	6.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

HCM Signalized Intersection Capacity Analysis
42: Van Ness Ave & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	106	302	214	203	441	194	258	663	136	183	1052	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	0.95		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	1747		1770	3377		1770	3449		1770	3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1747		1770	3377		1770	3449		1770	3488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	328	233	221	479	211	280	721	148	199	1143	123
RTOR Reduction (vph)	0	24	0	0	47	0	0	17	0	0	8	0
Lane Group Flow (vph)	115	537	0	221	643	0	280	852	0	199	1258	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.6	31.8		10.9	33.1		14.9	32.5		13.2	30.8	
Effective Green, g (s)	9.6	31.8		10.9	33.1		14.9	32.5		13.2	30.8	
Actuated g/C Ratio	0.09	0.30		0.10	0.32		0.14	0.31		0.13	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)	162	529		184	1065		251	1068		223	1023	
v/s Ratio Prot	0.06	c0.31		c0.12	0.19		c0.16	0.25		0.11	c0.36	
v/s Ratio Perm												
v/c Ratio	0.71	1.01		1.20	0.60		1.12	0.80		0.89	1.23	
Uniform Delay, d1	46.3	36.6		47.0	30.4		45.0	33.2		45.2	37.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.3	42.8		130.9	1.4		91.4	4.9		32.9	112.2	
Delay (s)	59.7	79.4		177.9	31.8		136.4	38.1		78.1	149.3	
Level of Service	E	E		F	C		F	D		E	F	
Approach Delay (s)		76.0			67.3			62.1			139.6	
Approach LOS		E			E			E			F	

Intersection Summary

HCM Average Control Delay	92.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
43: M St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	228	982	78	0	0	0	0	860	255	327	1139	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.2	4.2					4.2		4.2	4.2	
Lane Util. Factor		0.91	1.00					0.95		1.00	0.95	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		5038	1583					3418		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.18	1.00	
Satd. Flow (perm)		5038	1583					3418		326	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	85	0	0	0	0	935	277	355	1238	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1315	46	0	0	0	0	1210	0	355	1238	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					2124		203	2199	
v/s Ratio Prot		c0.26						0.35			0.35	
v/s Ratio Perm			0.03							c1.09		
v/c Ratio		0.98	0.11					0.57		1.75	0.56	
Uniform Delay, d1		27.3	20.8					8.3		14.2	8.3	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		19.4	0.0					0.2		356.5	0.2	
Delay (s)		46.7	20.8					8.5		370.7	8.5	
Level of Service		D	C					A		F	A	
Approach Delay (s)		45.1			0.0			8.5			89.2	
Approach LOS		D			A			A			F	

Intersection Summary

HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
44: P St & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	57	693	262	127	1482	0	0	1315	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			4883	
Flt Permitted					1.00		0.11	1.00			1.00	
Satd. Flow (perm)					3731		197	3539			4883	
Peak-hour factor, PHF	0.92	0.92	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	138	1611	0	0	1429	517
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	1087	0	138	1611	0	0	1920	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			0.46			0.39	
v/s Ratio Perm							c0.70					
v/c Ratio					0.86		1.29	0.84			0.73	
Uniform Delay, d1					21.6		16.0	13.4			12.0	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					6.2		183.6	3.3			0.9	
Delay (s)					27.8		199.5	16.7			12.9	
Level of Service					C		F	B			B	
Approach Delay (s)		0.0			27.8			31.1			12.9	
Approach LOS		A			C			C			B	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	8.4
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
45: R Street & Fresno

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	308	427	449	173	339	94	385	1221	166	56	1169	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	4994		1770	3539	1583
Flt Permitted	0.26	1.00	1.00	0.27	1.00		0.13	1.00		0.11	1.00	1.00
Satd. Flow (perm)	483	1863	1583	495	1802		234	4994		210	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	1327	180	61	1271	310
RTOR Reduction (vph)	0	0	29	0	9	0	0	16	0	0	0	106
Lane Group Flow (vph)	335	464	459	188	461	0	418	1491	0	61	1271	204
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		127	2701		114	1914	856
v/s Ratio Prot		0.25			0.26			0.30			0.36	
v/s Ratio Perm	c0.69		0.29	0.38			c1.79			0.29		0.13
v/c Ratio	1.84	0.66	0.77	1.01	0.68		3.29	0.55		0.54	0.66	0.24
Uniform Delay, d1	34.2	28.4	30.1	34.2	28.7		25.2	16.5		16.3	18.1	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	5.4	67.2	2.1		1051.1	0.1		2.4	0.7	0.1
Delay (s)	433.1	30.2	35.4	101.5	30.8		1076.3	16.7		18.7	18.8	13.4
Level of Service	F	C	D	F	C		F	B		B	B	B
Approach Delay (s)		137.0			51.0			246.8			17.7	
Approach LOS		F			D			F			B	

Intersection Summary

HCM Average Control Delay	129.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Volume (vph)	12	247	43	794	44	424	412	612	13	17	763	822
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	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)	559	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	863	48	461	448	665	14	18	829	893
RTOR Reduction (vph)	0	4	0	0	0	246	0	0	4	0	0	284
Lane Group Flow (vph)	13	311	0	449	462	215	448	665	10	18	829	609
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	30.0	65.8	65.8	4.2	40.0	40.0
Effective Green, g (s)	68.4	68.4		68.4	68.4	68.4	30.0	65.8	65.8	4.2	40.0	40.0
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)	252	822		368	356	714	350	1210	687	49	906	418
v/s Ratio Prot		0.17					c0.25	0.24		0.01	0.24	
v/s Ratio Perm	0.02			0.55	c0.59	0.14			0.01			c0.38
v/c Ratio	0.05	0.38		1.22	1.30	0.30	1.28	0.55	0.01	0.37	0.92	1.46
Uniform Delay, d1	23.4	27.5		41.6	41.6	26.4	60.8	31.9	24.4	72.4	54.2	55.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.3		121.2	153.3	0.3	146.3	0.9	0.0	1.7	14.1	218.4
Delay (s)	23.5	27.8		162.8	194.9	26.7	207.1	32.7	24.5	74.1	68.3	274.2
Level of Service	C	C		F	F	C	F	C	C	E	E	F
Approach Delay (s)		27.6			127.9		101.9				174.0	
Approach LOS		C			F		F				F	

Intersection Summary

HCM Average Control Delay	131.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (vph)	360	271	103	1600	592	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	0.68	1.00	0.35	1.00	1.00	1.00
Satd. Flow (perm)	1276	1583	661	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	295	112	1739	643	46
RTOR Reduction (vph)	0	90	0	0	0	26
Lane Group Flow (vph)	391	205	112	1739	643	20
Turn Type		custom	Perm			Perm
Protected Phases		4		2	6	
Permitted Phases	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)	532	660	286	1534	1534	686
v/s Ratio Prot		0.13		c0.49	0.18	
v/s Ratio Perm	c0.31		0.17			0.01
v/c Ratio	0.73	0.31	0.39	1.13	0.42	0.03
Uniform Delay, d1	14.7	11.7	11.6	17.0	11.8	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.1	0.3	68.8	0.1	0.0
Delay (s)	19.2	11.8	11.9	85.8	11.8	9.8
Level of Service	B	B	B	F	B	A
Approach Delay (s)	16.0			81.4	11.7	
Approach LOS	B			F	B	

Intersection Summary

HCM Average Control Delay	52.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	32	156	0	0	308	197	389	358	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			0.99				
Satd. Flow (prot)		3509			3332			4697				
Flt Permitted		0.83			1.00			0.99				
Satd. Flow (perm)		2939			3332			4697				
Peak-hour factor, PHF	0.92	0.92	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	389	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	1152	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			2175				
v/s Ratio Prot					c0.12			c0.25				
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)	319	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)	347	424	0	0	474	109	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	67	0	0	0	0	0	0
Lane Group Flow (vph)	347	424	0	0	474	42	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)	20.6	20.6			18.5	18.5						
Effective Green, g (s)	20.6	20.6			18.5	18.5						
Actuated g/C Ratio	0.43	0.43			0.39	0.39						
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)	761	801			720	611						
v/s Ratio Prot	0.20	c0.23			c0.25							
v/s Ratio Perm						0.03						
v/c Ratio	0.46	0.53			0.66	0.07						
Uniform Delay, d1	9.7	10.1			12.1	9.3						
Progression Factor	1.00	1.00			1.00	1.00						
Incremental Delay, d2	0.6	0.8			1.7	0.0						
Delay (s)	10.2	10.9			13.8	9.3						
Level of Service	B	B			B	A						
Approach Delay (s)		10.6			12.9			0.0			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	8.8
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	293	370	0	0	691	115	46	357	134	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.2	4.2			4.2		4.2	4.2				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.96				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1823		1770	1786				
Flt Permitted	0.21	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	384	1863			1823		1770	1786				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	318	402	0	0	751	125	50	388	146	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	11	0	0	0	0
Lane Group Flow (vph)	318	402	0	0	871	0	50	523	0	0	0	0
Turn Type	Perm			Perm			Split					
Protected Phases		2			6		8	8				
Permitted Phases	2			6								
Actuated Green, G (s)	81.8	81.8			81.8		29.8	29.8				
Effective Green, g (s)	81.8	81.8			81.8		29.8	29.8				
Actuated g/C Ratio	0.68	0.68			0.68		0.25	0.25				
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)	262	1270			1243		440	444				
v/s Ratio Prot		0.22			0.48		0.03	c0.29				
v/s Ratio Perm	c0.83											
v/c Ratio	1.21	0.32			0.70		0.11	1.18				
Uniform Delay, d1	19.1	7.8			11.6		34.9	45.1				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	126.0	0.1			1.5		0.0	101.0				
Delay (s)	145.1	7.8			13.1		34.9	146.1				
Level of Service	F	A			B		C	F				
Approach Delay (s)		68.4			13.1			136.6			0.0	
Approach LOS		E			B			F			A	

Intersection Summary

HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
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	141	337	108	159	414	0	0	0	60	2254	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	3518	
Flt Permitted		1.00			0.63					0.95	1.00	
Satd. Flow (perm)		3165			2030					1770	3518	
Peak-hour factor, PHF	0.92	0.92	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	2450	104
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	2552	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	2333	
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	49.9	
Delay (s)		47.5			103.0					29.3	74.6	
Level of Service		D			F					C	E	
Approach Delay (s)		47.5			103.0			0.0			73.5	
Approach LOS		D			F			A			E	

Intersection Summary

HCM Average Control Delay	75.6	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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	112	380	188	418	0	242	510	550	40	1398	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	554	598	43	1520	372
RTOR Reduction (vph)	0	84	0	0	0	0	0	0	256	0	0	23
Lane Group Flow (vph)	0	451	0	204	454	0	263	554	342	43	1520	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	0.30		0.02	c0.82	
v/s Ratio Perm									0.22			0.22
v/c Ratio		1.39		1.20	0.76		1.45	0.70	0.51	0.14	1.66	0.45
Uniform Delay, d1		58.5		65.9	44.4		65.4	34.6	31.0	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	2.4	0.3	0.1	302.4	0.2
Delay (s)		250.6		198.9	49.3		293.8	37.0	31.3	51.5	339.5	24.4
Level of Service		F		F	D		F	D	C	D	F	C
Approach Delay (s)		250.6			95.7			82.3			272.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	185.1	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	140.4%	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	234	27	211	506	0	0	0	255	155	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)		1837		1770	1863			1583		1770	1848	
Flt Permitted		1.00		0.39	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1837		734	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	254	29	229	550	0	0	0	277	168	1673	90
RTOR Reduction (vph)	0	3	0	0	0	0	0	155	0	0	1	0
Lane Group Flow (vph)	0	280	0	229	550	0	0	122	0	168	1762	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)		40.8		40.8	40.8			59.6		22.0	85.8	
Effective Green, g (s)		40.8		40.8	40.8			59.6		22.0	85.8	
Actuated g/C Ratio		0.30		0.30	0.30			0.44		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)		555		222	563			699		288	1175	
v/s Ratio Prot		0.15			0.30			0.08		0.09	c0.95	
v/s Ratio Perm				c0.31								
v/c Ratio		0.50		1.03	0.98			0.17		0.58	1.50	
Uniform Delay, d1		38.8		47.1	46.6			22.8		52.3	24.6	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3		68.9	31.6			0.0		1.9	229.3	
Delay (s)		39.0		116.0	78.3			22.9		54.2	253.9	
Level of Service		D		F	E			C		D	F	
Approach Delay (s)		39.0			89.3			22.9			236.5	
Approach LOS		D			F			C			F	

Intersection Summary

HCM Average Control Delay	166.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	153.2%	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)	452	1341	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	1458	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	1463	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	c0.53		c0.00			c0.02			c0.11
v/s Ratio Perm									0.09	
v/c Ratio	0.50	0.94		0.05			0.40		0.61	0.78
Uniform Delay, d1	13.5	20.5		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	11.3		0.3			0.9		6.2	14.1
Delay (s)	14.0	31.8		45.0			46.3		46.5	55.5
Level of Service	B	C		D			D		D	E
Approach Delay (s)	27.3			45.0			46.3	0.0		52.2
Approach LOS	C			D			D	A		D

Intersection Summary

HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	18.1
Intersection Capacity Utilization	77.3%	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)	262	296	8	113	263	182	237	266	1613	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	1753	32	0
Approach Volume (veh/h)		615			607				2332		0
Crossing Volume (veh/h)		380			2585#				607		607
High Capacity (veh/h)		1027			161				857		857
High v/c (veh/h)		0.60			3.77				2.72		0.00
Low Capacity (veh/h)		838			107				687		687
Low v/c (veh/h)		0.73			5.69				3.39		0.00

Intersection Summary			
Maximum v/c High	3.77		
Maximum v/c Low	5.69		
Intersection Capacity Utilization	128.6%	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

4/10/2012

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	1718	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	1867	324
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	5
Lane Group Flow (vph)	0	552	0	0	1184	0	0	0	0	129	1867	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	c0.53	
v/s Ratio Perm												0.20
v/c Ratio		0.46			0.96					0.14	0.99	0.38
Uniform Delay, d1		20.3			25.6					9.3	18.3	10.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6			17.6					0.1	17.5	0.6
Delay (s)		20.8			43.2					9.5	35.8	11.4
Level of Service		C			D					A	D	B
Approach Delay (s)		20.8			43.2			0.0			30.9	
Approach LOS		C			D			A			C	

Intersection Summary

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	80.0	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 Unsignalized Intersection Capacity Analysis
58: H St & San Joaquin St

4/10/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	5	1688	608	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	1835	661	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	665				2509	663
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	665				2509	663
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				86	100
cM capacity (veh/h)	924				31	461

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1840	665	7
Volume Left	5	0	4
Volume Right	0	4	2
cSH	924	1700	45
Volume to Capacity	0.01	0.39	0.14
Queue Length 95th (ft)	0	0	12
Control Delay (s)	0.0	0.0	97.7
Lane LOS	A		F
Approach Delay (s)	0.0	0.0	97.7
Approach LOS			F

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
59: E Divisadero St & N San Pablo Ave

4/10/2012

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

4/10/2012

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	118	1626	547	69	73	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	1767	595	75	79	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	670				2656	632
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670				2656	632
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				0	46
cM capacity (veh/h)	921				22	480

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	1896	670	340
Volume Left	128	0	79
Volume Right	0	75	261
cSH	921	1700	81
Volume to Capacity	0.14	0.39	4.21
Queue Length 95th (ft)	12	0	Err
Control Delay (s)	0.6	0.0	Err
Lane LOS	A		F
Approach Delay (s)	0.6	0.0	Err
Approach LOS			F

Intersection Summary			
Average Delay	1171.3		
Intersection Capacity Utilization	153.9%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/10/2012

Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	207	0	33	0	785	86	21	1011	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)		4.5			4.9		4.9	4.9			
Lane Util. Factor		0.97			0.95		1.00	1.00			
Frt		0.98			0.99		1.00	1.00			
Flt Protected		0.96			1.00		0.95	1.00			
Satd. Flow (prot)		3393			3487		1770	1863			
Flt Permitted		0.75			1.00		0.28	1.00			
Satd. Flow (perm)		2672			3487		525	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
Adj. Flow (vph)	225	0	36	0	853	93	23	1099	0	0	0
RTOR Reduction (vph)	0	10	0	0	4	0	0	0	0	0	0
Lane Group Flow (vph)	0	251	0	0	942	0	23	1099	0	0	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)		19.1			87.7		87.7	87.7			
Effective Green, g (s)		19.1			87.7		87.7	87.7			
Actuated g/C Ratio		0.16			0.75		0.75	0.75			
Clearance Time (s)		4.5			4.9		4.9	4.9			
Vehicle Extension (s)		5.0			4.0		4.0	4.0			
Lane Grp Cap (vph)		439			2632		396	1406			
v/s Ratio Prot					0.27			c0.59			
v/s Ratio Perm		c0.09					0.04				
v/c Ratio		0.93dl			0.36		0.06	0.78			
Uniform Delay, d1		44.8			4.8		3.7	8.5			
Progression Factor		1.00			1.00		1.00	1.00			
Incremental Delay, d2		2.9			0.1		0.1	3.1			
Delay (s)		47.6			4.9		3.7	11.6			
Level of Service		D			A		A	B			
Approach Delay (s)		47.6			4.9			11.4		0.0	
Approach LOS		D			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)	116.2	Sum of lost time (s)	9.4
Intersection Capacity Utilization	73.5%	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
63: E Divisadero St & N Echo St

4/10/2012

Movement	EBT	EBR	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR2	SEL2	SEL
Lane Configurations												
Volume (vph)	52	42	22	1545	2	9	691	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	0.94		0.85	0.85				1.00	0.85	0.86		0.91
Flt Protected	1.00		1.00	1.00				0.95	1.00	1.00		0.98
Satd. Flow (prot)	1750		1512	1504				3362	1583	1611		3232
Flt Permitted	1.00		1.00	1.00				0.95	1.00	1.00		0.95
Satd. Flow (perm)	1750		1512	1504				3362	1583	1611		3151
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	46	24	1679	2	10	751	0	48	7	1	1073
RTOR Reduction (vph)	19	0	0	0	0	0	0	0	32	6	0	0
Lane Group Flow (vph)	84	0	847	858	0	0	0	761	16	1	0	2556
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)	53.4		53.4	77.8				24.4	24.4	24.8		53.8
Effective Green, g (s)	53.4		53.4	77.8				24.4	24.4	24.8		53.8
Actuated g/C Ratio	0.36		0.36	0.52				0.16	0.16	0.17		0.36
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)	623		538	780				547	258	266		1146
v/s Ratio Prot	0.05		c0.56	0.18						0.00		c0.44
v/s Ratio Perm				0.39				0.23	0.01			c0.36
v/c Ratio	0.13		1.57	1.10				2.64dl	0.06	0.00		2.36dr
Uniform Delay, d1	32.7		48.3	36.1				62.8	53.1	52.3		52.1
Progression Factor	1.00		1.00	1.00				1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2		267.3	63.1				187.1	0.1	0.0		556.5
Delay (s)	32.9		315.6	99.2				249.9	53.3	52.3		608.6
Level of Service	C		F	F				F	D	D		F
Approach Delay (s)	32.9		206.7					238.2				608.6
Approach LOS	C		F					F				F

Intersection Summary

HCM Average Control Delay	406.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	154.1%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	SER	SER2
Lane Configurations		
Volume (vph)	1357	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)	1475	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

HCM Signalized Intersection Capacity Analysis
64: E Divisadero St & Broadway St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	75	1030	286	41	1187	158	153	232	85	297	306	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	0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3527	1583		3473		1770	1788		1770	1835	
Flt Permitted		0.59	1.00		0.82		0.39	1.00		0.42	1.00	
Satd. Flow (perm)		2072	1583		2841		723	1788		776	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	252	92	323	333	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	329	0	323	365	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		276	683		297	701	
v/s Ratio Prot								0.18			0.20	
v/s Ratio Perm		c0.58	0.14		0.53		0.23			c0.42		
v/c Ratio		1.13	0.28		1.02		0.60	0.48		1.09	0.52	
Uniform Delay, d1		21.8	12.3		21.8		22.3	21.1		27.8	21.4	
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		2.5	0.2		77.6	0.3	
Delay (s)		90.7	12.4		50.8		24.8	21.2		105.4	21.8	
Level of Service		F	B		D		C	C		F	C	
Approach Delay (s)		74.6			50.8			22.4			60.8	
Approach LOS		E			D			C			E	

Intersection Summary

HCM Average Control Delay	57.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
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

4/10/2012

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	284	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	309	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	309	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	0.43	0.45	
Uniform Delay, d1		14.6			14.2		11.1		10.8	12.8	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	0.2	0.1	
Delay (s)		18.5			16.9		11.2		10.8	13.0	13.0	
Level of Service		B			B		B		B	B	B	
Approach Delay (s)		18.5			16.9			11.0			13.0	
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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	800	508	179	9	897	108	178	537	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.5			4.5			4.2				
Lane Util. Factor		0.95			0.95			0.95				
Frt		0.98			0.98			1.00				
Flt Protected		0.97			1.00			0.99				
Satd. Flow (prot)		3384			3481			3485				
Flt Permitted		0.50			0.93			0.99				
Satd. Flow (perm)		1732			3240			3485				
Peak-hour factor, PHF	0.92	0.92	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	195	10	975	117	193	584	18	0	0	0
RTOR Reduction (vph)	0	8	0	0	4	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	1609	0	0	1098	0	0	794	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)		1293			2418			667				
v/s Ratio Prot								c0.23				
v/s Ratio Perm		c0.93			0.34							
v/c Ratio		2.68dl			0.45			1.19				
Uniform Delay, d1		17.8			6.8			56.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		116.8			0.0			100.2				
Delay (s)		134.5			6.9			156.8				
Level of Service		F			A			F				
Approach Delay (s)		134.5			6.9			156.8			0.0	
Approach LOS		F			A			F			A	

Intersection Summary

HCM Average Control Delay	99.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.7
Intersection Capacity Utilization	104.4%	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

4/10/2012

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	29	0	23	0	0	2	1	2328	57	25	2269	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			0.86			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			1611			3539	1583		3537	
Flt Permitted	0.76	1.00			1.00			0.91	1.00		0.66	
Satd. Flow (perm)	1409	1583			1611			3205	1583		2344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	0	25	0	0	2	1	2530	62	27	2466	1
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	5	0	0	0
Lane Group Flow (vph)	32	24	0	0	1	0	0	2531	57	0	2494	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)	21.1	21.1			21.1			78.2	78.2		78.2	
Effective Green, g (s)	21.1	21.1			21.1			78.2	78.2		78.2	
Actuated g/C Ratio	0.20	0.20			0.20			0.72	0.72		0.72	
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)	275	309			314			2319	1145		1696	
v/s Ratio Prot		0.02			0.00							
v/s Ratio Perm	c0.02							0.79	0.04		c1.06	
v/c Ratio	0.12	0.08			0.00			1.09	0.05		1.47	
Uniform Delay, d1	35.8	35.6			35.0			14.9	4.3		14.9	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.2			0.0			48.9	0.0		215.0	
Delay (s)	36.2	35.8			35.0			63.9	4.3		230.0	
Level of Service	D	D			D			E	A		F	
Approach Delay (s)		36.0			35.0			62.5			230.0	
Approach LOS		D			D			E			F	

Intersection Summary

HCM Average Control Delay	143.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	8.8
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
68: E McKenzie Ave. & N Blackstone Ave

4/10/2012

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	1788	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						4995	
Flt Permitted		1.00			0.45						1.00	
Satd. Flow (perm)		1780			840						4995	
Peak-hour factor, PHF	0.92	0.92	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	1943	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	2347	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									c0.47	
v/s Ratio Perm					c0.60							
v/c Ratio		0.59			1.21						1.12	
Uniform Delay, d1		19.7			27.6						31.9	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		1.3			116.1						61.6	
Delay (s)		20.9			143.7						93.6	
Level of Service		C			F						F	
Approach Delay (s)		20.9			143.7			0.0			93.6	
Approach LOS		C			F			A			F	

Intersection Summary

HCM Average Control Delay	89.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	105.7%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	110	0	0	136	151	37	1517	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			5058				
Flt Permitted		0.78			1.00			1.00				
Satd. Flow (perm)		1457			1731			5058				
Peak-hour factor, PHF	0.92	0.92	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	1649	50	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	192	0	0	308	0	0	1733	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			0.72				
Uniform Delay, d1		11.6			12.3			9.0				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.9			1.7			0.9				
Delay (s)		12.5			13.9			9.9				
Level of Service		B			B			A				
Approach Delay (s)		12.5			13.9			9.9			0.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	9.1
Intersection Capacity Utilization	68.0%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	563	227	0	0	0	0	0	0	857	585	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)		3387									3437	
Flt Permitted		1.00									0.97	
Satd. Flow (perm)		3387									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	247	0	0	0	0	0	0	932	636	0
RTOR Reduction (vph)	0	60	0	0	0	0	0	0	0	0	87	0
Lane Group Flow (vph)	0	799	0	0	0	0	0	0	0	0	1481	0
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		29.1									34.3	
Effective Green, g (s)		29.1									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)		1365									1633	
v/s Ratio Prot		c0.24										
v/s Ratio Perm											0.43	
v/c Ratio		0.59									1.00dl	
Uniform Delay, d1		16.8									17.5	
Progression Factor		1.00									1.00	
Incremental Delay, d2		1.3									8.3	
Delay (s)		18.2									25.8	
Level of Service		B									C	
Approach Delay (s)		18.2			0.0			0.0			25.8	
Approach LOS		B			A			A			C	

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	8.8
Intersection Capacity Utilization	77.6%	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

4/10/2012

Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations											
Volume (vph)	321	1101	0	0	507	824	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	551	896	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	551	863	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			0.16						
v/s Ratio Perm						c0.55					
v/c Ratio	0.29	1.26			0.39	1.36					
Uniform Delay, d1	19.1	34.8			31.7	44.8					
Progression Factor	1.00	1.00			1.00	1.00					
Incremental Delay, d2	0.4	126.1			0.3	169.9					
Delay (s)	19.4	160.9			32.0	214.7					
Level of Service	B	F			C	F					
Approach Delay (s)		129.0			145.1			0.0		0.0	
Approach LOS		F			F			A		A	

Intersection Summary

HCM Average Control Delay	136.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
72: 180 WB Ramps & N Fulton St

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1303	479	7	97	0	0	0	0	0	956	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		1.00						1.00	
Satd. Flow (prot)		1863	1583		1856						3403	
Flt Permitted		1.00	1.00		0.64						1.00	
Satd. Flow (perm)		1863	1583		1184						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	105	0	0	0	0	0	1039	357
RTOR Reduction (vph)	0	0	7	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	1416	514	0	113	0	0	0	0	0	1368	0
Turn Type			Perm	Perm								
Protected Phases		4			8						6	
Permitted Phases			4	8								
Actuated Green, G (s)		71.3	71.3		71.3						40.9	
Effective Green, g (s)		71.3	71.3		71.3						40.9	
Actuated g/C Ratio		0.59	0.59		0.59						0.34	
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)		1107	941		703						1160	
v/s Ratio Prot		c0.76									c0.40	
v/s Ratio Perm			0.32		0.10							
v/c Ratio		1.28	0.55		0.16						1.18	
Uniform Delay, d1		24.4	14.6		10.9						39.5	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		132.7	1.1		0.2						89.7	
Delay (s)		157.0	15.8		11.1						129.3	
Level of Service		F	B		B						F	
Approach Delay (s)		119.0			11.1			0.0			129.3	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	119.6	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

4/10/2012

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1305	0	105	721	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.6			4.6		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	0.95			0.99		
Satd. Flow (prot)	1770			3517		
Flt Permitted	0.95			0.99		
Satd. Flow (perm)	1770			3517		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1418	0	114	784	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1418	0	0	898	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			814		
v/s Ratio Prot	c0.80			c0.26		
v/s Ratio Perm						
v/c Ratio	1.14			1.10		
Uniform Delay, d1	20.8			53.8		
Progression Factor	1.00			1.00		
Incremental Delay, d2	73.1			63.7		
Delay (s)	93.9			117.5		
Level of Service	F			F		
Approach Delay (s)	93.9			117.5	0.0	
Approach LOS	F			F	A	

Intersection Summary

HCM Average Control Delay	103.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	102.9%	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

4/10/2012

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	1740	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						4893	
Flt Permitted		1.00		0.95	1.00						0.99	
Satd. Flow (perm)		3488		1770	3539						4893	
Peak-hour factor, PHF	0.92	0.92	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	1891	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	2877	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						2058	
v/s Ratio Prot		c0.58		c0.15	0.42						c0.59	
v/s Ratio Perm												
v/c Ratio		1.49		1.42	0.80						1.40	
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						182.0	
Delay (s)		272.2		284.3	33.0						225.5	
Level of Service		F		F	C						F	
Approach Delay (s)		272.2			72.3			0.0			225.5	
Approach LOS		F			E			A			F	

Intersection Summary

HCM Average Control Delay	199.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	130.2%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	422	1610	0	0	1540	302	62	1620	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	1761	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	1828	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			c0.36				
v/s Ratio Perm						0.20			0.01			
v/c Ratio	1.28	0.80			1.21	0.51		1.14	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		72.4	0.0			
Delay (s)	202.6	22.4			143.5	33.8		120.4	33.3			
Level of Service	F	C			F	C		F	C			
Approach Delay (s)		59.9			125.5			118.9			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	99.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	130.2%	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)	121	1327	109	184	1298	145	172	647	217	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	3406		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	3406		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	200	1411	158	187	703	236	491	771	425
RTOR Reduction (vph)	0	4	0	0	6	0	0	22	0	0	52	0
Lane Group Flow (vph)	132	1556	0	200	1563	0	187	917	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	855		305	1303	
v/s Ratio Prot	0.07	0.44		c0.11	c0.45		0.11	0.27		c0.28	c0.34	
v/s Ratio Perm												
v/c Ratio	0.90	1.49		1.26	1.47		1.02	1.07		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		156.9	214.6		72.4	51.9		289.2	7.6	
Delay (s)	112.0	274.6		222.9	264.9		137.4	106.2		349.2	48.7	
Level of Service	F	F		F	F		F	F		F	D	
Approach Delay (s)		261.9			260.1			111.4			136.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	200.6	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	123.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
77: Belmont Steet & First Street

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	307	1343	437	167	1022	167	442	918	98	209	801	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	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)	334	1460	475	182	1111	182	480	998	107	227	871	290
RTOR Reduction (vph)	0	0	63	0	9	0	0	5	0	0	0	76
Lane Group Flow (vph)	334	1460	412	182	1284	0	480	1100	0	227	871	214
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	c0.19	0.41		0.10	c0.37		c0.27	0.32		0.13	c0.25	
v/s Ratio Perm			0.26									0.14
v/c Ratio	1.28	1.12	0.71	1.28	1.23		1.31	1.00		1.07	1.08	0.60
Uniform Delay, d1	64.0	47.5	40.6	69.0	52.5		59.5	51.5		66.0	58.0	51.8
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	154.1	66.0	4.5	169.8	113.0		158.5	28.2		81.8	56.2	4.0
Delay (s)	218.1	113.4	45.1	238.8	165.4		218.0	79.6		147.8	114.2	55.7
Level of Service	F	F	D	F	F		F	E		F	F	E
Approach Delay (s)		114.5			174.5			121.5			107.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	127.9	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	112.0%	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

4/10/2012

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	102	0	0	0	504	2551
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					5044
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1770					5044
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	0	0	0	548	2773
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	111	0	0	0	0	3321
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					3834
v/s Ratio Prot	c0.06					c0.66
v/s Ratio Perm						
v/c Ratio	0.50					0.87
Uniform Delay, d1	32.5					6.7
Progression Factor	1.00					1.00
Incremental Delay, d2	3.4					2.5
Delay (s)	35.9					9.2
Level of Service	D					A
Approach Delay (s)	35.9		0.0			9.2
Approach LOS	D		A			A

Intersection Summary

HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	9.1
Intersection Capacity Utilization	181.3%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	480	0	0	102	581	0	1187	1197	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	1290	1301	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	46	0	0	0
Lane Group Flow (vph)	25	522	0	0	111	586	0	1290	1255	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			c0.79			
v/c Ratio	0.07	0.89			0.19	1.18		0.41	1.29			
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	99.9		0.2	136.8			
Delay (s)	31.4	59.7			33.0	144.5		13.0	161.8			
Level of Service	C	E			C	F		B	F			
Approach Delay (s)		58.4			127.8			87.7			0.0	
Approach LOS		E			F			F			A	

Intersection Summary

HCM Average Control Delay	91.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	167.4%	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

4/10/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	594	1192	20	303	0	0	0	0	5	1819	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)		1695		1770	1863						3539	1583
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1695		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	1296	22	329	0	0	0	0	5	1977	733
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	1896	0	22	329	0	0	0	0	0	1982	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)		887		84	1111						1206	540
v/s Ratio Prot		c1.12		0.01	c0.18						c0.56	
v/s Ratio Perm												0.35
v/c Ratio		2.14		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		515.6		0.6	0.3						293.3	43.7
Delay (s)		550.2		67.3	14.6						341.2	91.5
Level of Service		F		E	B						F	F
Approach Delay (s)		550.2			17.9			0.0			273.8	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	363.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.87		
Actuated Cycle Length (s)	145.2	Sum of lost time (s)	13.3
Intersection Capacity Utilization	162.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	193	65	160	237	271	0	14	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	174	258	295	0	15	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			245			2560	1387	122	2148	1474	295
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	295			245			2560	1387	122	2148	1474	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			80			0	0	100	0	0	85
cM capacity (veh/h)	1264			1319			0	95	906	0	84	702

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	245	209	552	1782	2539
Volume Left	210	0	258	15	300
Volume Right	0	174	0	1	108
cSH	1264	1700	1319	0	0
Volume to Capacity	0.17	0.12	0.20	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	264.0%	ICU Level of Service	H
Analysis Period (min)	15		

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

4/10/2012

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	158	279	188	156	468	86	440	591	120	50	1440	1087
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	0.97		1.00	0.94	
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	3795		1947	3642	
Flt Permitted	0.29	1.00	1.00	0.54	1.00	1.00	0.25	1.00		0.31	1.00	
Satd. Flow (perm)	594	2049	1742	1104	2049	1742	509	3795		628	3642	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	303	204	170	509	93	478	642	130	54	1565	1182
RTOR Reduction (vph)	0	0	3	0	0	59	0	41	0	0	119	0
Lane Group Flow (vph)	172	303	201	170	509	34	478	731	0	54	2628	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	402	746	634	216	1612		267	1547	
v/s Ratio Prot		0.15			0.25			0.19			0.72	
v/s Ratio Perm	c0.29		0.12	0.15		0.02	c0.94			0.09		
v/c Ratio	0.80	0.41	0.32	0.42	0.68	0.05	2.21	0.45		0.20	1.70	
Uniform Delay, d1	10.8	9.0	8.7	9.1	10.2	7.8	10.9	7.8		6.9	10.9	
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	18.1	0.4	0.3	0.7	2.6	0.0	560.6	0.2		0.4	317.2	
Delay (s)	28.9	9.4	9.0	9.8	12.8	7.8	571.5	8.0		7.2	328.1	
Level of Service	C	A	A	A	B	A	F	A		A	F	
Approach Delay (s)		14.2			11.5			223.5			321.9	
Approach LOS		B			B			F			F	

Intersection Summary

HCM Average Control Delay	218.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	145.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

4/10/2012

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	105	218	164	348	184	38
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)	114	237	178	378	200	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)	986			536		
pX, platoon unblocked					0.94	
vC, conflicting volume			351		967	233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			351		933	233
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		15	95
cM capacity (veh/h)			1208		237	807

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	351	557	241
Volume Left	0	178	200
Volume Right	237	0	41
cSH	1700	1208	269
Volume to Capacity	0.21	0.15	0.90
Queue Length 95th (ft)	0	13	198
Control Delay (s)	0.0	3.8	72.2
Lane LOS		A	F
Approach Delay (s)	0.0	3.8	72.2
Approach LOS			F

Intersection Summary			
Average Delay	17.0		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
85: H St & Mono St

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	218	259	8	2	87	0	4	9	7	10	14	87
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)	237	282	9	2	95	0	4	10	8	11	15	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)		466										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	95			290			961	859	286	871	863	95
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	95			269			952	848	265	860	852	95
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			100			98	96	99	95	94	90
cM capacity (veh/h)	1499			1272			178	247	761	229	245	962

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	527	97	22	121
Volume Left	237	2	4	11
Volume Right	9	0	8	95
cSH	1499	1272	293	580
Volume to Capacity	0.16	0.00	0.07	0.21
Queue Length 95th (ft)	14	0	6	19
Control Delay (s)	4.4	0.2	18.3	12.8
Lane LOS	A	A	C	B
Approach Delay (s)	4.4	0.2	18.3	12.8
Approach LOS			C	B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
86: H St & Ventura Ave

4/9/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	229	10	216	25	10	21	141	1119	27	3	1238	148
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)	249	11	235	27	11	23	153	1216	29	3	1346	161
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								687			485	
pX, platoon unblocked	0.78	0.78	0.70	0.78	0.78	0.84	0.70			0.84		
vC, conflicting volume	2376	2985	753	2457	3051	623	1507			1246		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1267	2051	0	1372	2135	168	857			910		
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	64	69	16	60	97	72			99		
cM capacity (veh/h)	51	31	756	32	27	711	543			625		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	495	61	153	811	435	3	897	609
Volume Left	249	27	153	0	0	3	0	0
Volume Right	235	23	0	0	29	0	0	161
cSH	90	48	543	1700	1700	625	1700	1700
Volume to Capacity	5.51	1.28	0.28	0.48	0.26	0.01	0.53	0.36
Queue Length 95th (ft)	Err	142	29	0	0	0	0	0
Control Delay (s)	Err	360.9	14.2	0.0	0.0	10.8	0.0	0.0
Lane LOS	F	F	B			B		
Approach Delay (s)	Err	360.9	1.6			0.0		
Approach LOS	F	F						

Intersection Summary			
Average Delay	1434.5		
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	341	81	0	533	0	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	371	88	0	579	0	0	0	12	343	29	147

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total (vph)	459	579	12	373	147
Volume Left (vph)	0	0	0	343	0
Volume Right (vph)	88	0	12	0	147
Hadj (s)	-0.08	0.03	-0.57	0.22	-0.57
Departure Headway (s)	6.4	6.4	7.9	7.0	3.2
Degree Utilization, x	0.81	1.03	0.03	0.73	0.13
Capacity (veh/h)	556	553	388	373	1121
Control Delay (s)	31.4	70.3	11.2	26.7	6.7
Approach Delay (s)	31.4	70.3	11.2	21.1	
Approach LOS	D	F	B	C	

Intersection Summary			
Delay	42.2		
HCM Level of Service	E		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
89: M St &

4/10/2012

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)		1065										
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	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

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

4/10/2012

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	357	20	7	280	35	35	3	5	71	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	22	8	304	38	38	3	5	77	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)		478										
pX, platoon unblocked												
vC, conflicting volume	342			410			908	830	205	614	822	323
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342			410			908	830	205	614	822	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			79	99	99	79	89	88
cM capacity (veh/h)	1213			1146			180	293	802	360	296	672

Direction, Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total	231	216	350	47	190
Volume Left	37	0	8	38	77
Volume Right	0	22	38	5	79
cSH	1213	1700	1146	204	426
Volume to Capacity	0.03	0.13	0.01	0.23	0.45
Queue Length 95th (ft)	2	0	1	21	56
Control Delay (s)	1.5	0.0	0.2	27.8	20.1
Lane LOS	A		A	D	C
Approach Delay (s)	0.8		0.2	27.8	20.1
Approach LOS				D	C

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	42.5%	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)	142	538	60	92	474	43	113	132	171	402	222	135
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	437	241	147
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	1975	1764	315	2028	1744	236	388			329		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1975	1764	315	2028	1744	236	388			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			64		
cM capacity (veh/h)	0	49	726	0	50	803	1170			1230		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	804	662	452	825
Volume Left	154	100	123	437
Volume Right	65	47	186	147
cSH	0	0	1170	1230
Volume to Capacity	Err	Err	0.10	0.36
Queue Length 95th (ft)	Err	Err	9	41
Control Delay (s)	Err	Err	3.1	7.1
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	3.1	7.1
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	133.7%	ICU Level of Service	H
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)	184	615	366	224	825	550	674	1463	176	494	1097	700
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	0.94	
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	3666	
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	3666	
Peak-hour factor, PHF	0.92	0.92	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	733	1590	191	537	1192	761
RTOR Reduction (vph)	0	0	206	0	0	207	0	13	0	0	53	0
Lane Group Flow (vph)	200	668	192	243	897	391	733	1768	0	537	1901	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	11.0	23.0		9.0	21.0	
Effective Green, g (s)	26.0	26.0	26.0	26.0	26.0	26.0	11.0	23.0		9.0	21.0	
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.37	0.16	0.33		0.13	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	
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	306	1259		250	1100	
v/s Ratio Prot		0.17			0.44		c0.38	0.46		0.28	c0.52	
v/s Ratio Perm	c0.63		0.11	0.40		0.22						
v/c Ratio	1.71	0.46	0.30	1.08	1.18	0.60	2.40	1.40		2.15	1.73	
Uniform Delay, d1	22.0	16.7	15.5	22.0	22.0	17.8	29.5	23.5		30.5	24.5	
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	352.8	0.2	0.3	82.9	93.8	1.6	637.9	186.6		529.7	331.3	
Delay (s)	374.8	16.9	15.8	104.9	115.8	19.4	667.4	210.1		560.2	355.8	
Level of Service	F	B	B	F	F	B	F	F		F	F	
Approach Delay (s)		73.1			81.1			343.4			399.9	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	261.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	157.0%	ICU Level of Service	H
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	2574	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	2798	38
RTOR Reduction (vph)	0	28	0	0	6	0	0	0	13	0	0	5
Lane Group Flow (vph)	71	31	0	53	41	0	1	1768	29	20	2798	33
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	c0.72	
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	1.21	0.03
Uniform Delay, d1	33.5	29.5		34.7	31.1		37.0	12.6	7.0	35.9	15.4	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	98.7	0.0
Delay (s)	35.8	29.8		38.0	31.6		37.6	14.6	7.0	38.6	114.1	6.4
Level of Service	D	C		D	C		D	B	A	D	F	A
Approach Delay (s)		33.1			35.0			14.4			112.1	
Approach LOS		C			C			B			F	

Intersection Summary

HCM Average Control Delay	72.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
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)	653	621	517	1124	914	32	281	271	1920	443	502	2970
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	3788
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	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)	710	675	562	1222	993	35	305	295	2087	482	546	3228
RTOR Reduction (vph)	0	90	0	0	0	0	0	0	13	0	0	12
Lane Group Flow (vph)	710	1147	0	1222	1028	0	0	600	2556	0	546	3921
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	1818
v/s Ratio Prot	0.19	c0.32		c0.32	0.27			c0.16	0.68		0.14	c1.03
v/s Ratio Perm												
v/c Ratio	1.88	1.69		2.02	1.08			2.38	1.45		1.81	2.16
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	52.0			633.5	204.5		376.5	522.3
Delay (s)	472.7	379.6		529.2	108.5			703.5	244.5		445.5	561.3
Level of Service	F	F		F	F			F	F		F	F
Approach Delay (s)		413.5			337.0				331.4			547.1
Approach LOS		F			F				F			F

Intersection Summary

HCM Average Control Delay	427.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	197.7%	ICU Level of Service	H
Analysis Period (min)	15		

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
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)	150	0	96	0	0	0	0	1562	96	61	1990	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)	163	0	104	0	0	0	0	1698	104	66	2163	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2964	4046	901	3145	4098	1082	2163			1802		
vC1, stage 1 conf vol	1750	1750		2296	2296							
vC2, stage 2 conf vol	1214	2296		849	1802							
vCu, unblocked vol	2964	4046	901	3145	4098	1082	2163			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	100	63	100	100	100	100			80		
cM capacity (veh/h)	54	38	281	24	29	213	244			338		

Direction, Lane #	NB 1	SB 1	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3
Volume Total	267	0	0	1132	670	66	1442	721
Volume Left	163	0	0	0	0	66	0	0
Volume Right	104	0	0	0	104	0	0	0
cSH	79	1700	1700	1700	1700	338	1700	1700
Volume to Capacity	3.40	0.00	0.00	0.67	0.39	0.20	0.85	0.42
Queue Length 95th (ft)	Err	0	0	0	0	18	0	0
Control Delay (s)	Err	0.0	0.0	0.0	0.0	18.2	0.0	0.0
Lane LOS	F	A				C		
Approach Delay (s)	Err	0.0	0.0			0.5		
Approach LOS	F	A						

Intersection Summary			
Average Delay	622.2		
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

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	1398	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	1726	0
Approach Volume (veh/h)		545			0			0			3153	
Crossing Volume (veh/h)		3153#			0			1611#			0	
High Capacity (veh/h)		97			1385			374			1385	
High v/c (veh/h)		5.62			0.00			0.00			2.28	
Low Capacity (veh/h)		60			1161			274			1161	
Low v/c (veh/h)		9.06			0.00			0.00			2.72	

Intersection Summary			
Maximum v/c High	5.62		
Maximum v/c Low	9.06		
Intersection Capacity Utilization	173.5%	ICU Level of Service	H

Crossing flow exceeds 1200, method is not applicable

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	2102	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	2961	899
Approach Volume (veh/h)		0			1340			0			2961	
Crossing Volume (veh/h)		3561#			0			0			1340#	
High Capacity (veh/h)		67			1385			1385			470	
High v/c (veh/h)		0.00			0.97			0.00			6.30	
Low Capacity (veh/h)		39			1161			1161			353	
Low v/c (veh/h)		0.00			1.15			0.00			8.38	

Intersection Summary

Maximum v/c High	6.30		
Maximum v/c Low	8.38		
Intersection Capacity Utilization	173.6%	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)	362	957	0	0	0	0	0	405	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						5400				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3840						5400				
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	455	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	555	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	664	793	371	398	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	442	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	742	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			19.8				
Level of Service					B			B				
Approach Delay (s)		0.0			13.8			19.8			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)	530	888	414	0	42	1885
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	998	450	0	47	2118
RTOR Reduction (vph)	0	229	0	0	0	0
Lane Group Flow (vph)	596	769	450	0	47	2118
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	60.0	0.4		3.5	28.0
Delay (s)	34.9	95.9	24.4		59.2	56.5
Level of Service	C	F	C		E	E
Approach Delay (s)	73.1		24.4			56.6
Approach LOS	E		C			E

Intersection Summary

HCM Average Control Delay	59.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	37	0	0	995	0	436	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	469	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	469	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		48.7		37.9			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.0			15.5		35.3		0.1			
Delay (s)		6.3			33.8		83.9		38.0			
Level of Service		A			C		F		D			
Approach Delay (s)		6.3			33.8			70.9			0.0	
Approach LOS		A			C			E			A	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.2%	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	468	107	123	185	0	0	255	255	0	1644	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			0.93			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1992		1947	2049			1895			2024	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1992		1947	2049			1895			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	277	277	0	2192	196
RTOR Reduction (vph)	0	5	0	0	0	0	0	19	0	0	2	0
Lane Group Flow (vph)	0	696	0	256	385	0	0	535	0	0	2386	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			1134			1212	
v/s Ratio Prot		c0.35		c0.13	0.19			0.28			c1.18	
v/s Ratio Perm												
v/c Ratio		1.46		1.70	0.54			0.47			1.97	
Uniform Delay, d1		54.0		65.5	37.5			15.9			28.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		217.7		339.7	0.9			0.3			438.9	
Delay (s)		271.7		405.2	38.4			16.3			467.4	
Level of Service		F		F	D			B			F	
Approach Delay (s)		271.7			184.9			16.3			467.4	
Approach LOS		F			F			B			F	

Intersection Summary

HCM Average Control Delay	334.7	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	143.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	583	0	298	50	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)	720	0	359	60	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	720	0	359	60	0	0
Turn Type		Perm	Perm			
Protected Phases	6			4	8	
Permitted Phases		6	4			
Actuated Green, G (s)	17.7		13.0	13.0		
Effective Green, g (s)	17.7		13.0	13.0		
Actuated g/C Ratio	0.46		0.34	0.34		
Clearance Time (s)	4.0		4.0	4.0		
Vehicle Extension (s)	3.0		3.0	3.0		
Lane Grp Cap (vph)	890		521	688		
v/s Ratio Prot	c0.37			0.03		
v/s Ratio Perm			c0.23			
v/c Ratio	0.81		0.69	0.09		
Uniform Delay, d1	9.0		11.1	8.8		
Progression Factor	1.00		1.00	1.00		
Incremental Delay, d2	5.5		3.8	0.1		
Delay (s)	14.5		14.9	8.8		
Level of Service	B		B	A		
Approach Delay (s)	14.5			14.0	0.0	
Approach LOS	B			B	A	

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	38.7	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

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	1549	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	1912	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	1929	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	c0.94	
v/s Ratio Perm												
v/c Ratio		1.13			1.58					0.28	1.86	
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	390.8	
Delay (s)		163.2			319.2					20.3	425.8	
Level of Service		F			F					C	F	
Approach Delay (s)		163.2			319.2			0.0			374.6	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	343.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	141.3%	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)	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	365	403	0	0	0	0	0	0	590	1385	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	702	1649	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	702	1708	0
Turn Type	Perm						Prot			Prot		
Protected Phases		6					7	4		3	8	
Permitted Phases	6											
Actuated Green, G (s)		50.0								84.0	84.0	
Effective Green, g (s)		50.0								84.0	84.0	
Actuated g/C Ratio		0.35								0.59	0.59	
Clearance Time (s)		4.0								4.0	4.0	
Vehicle Extension (s)		3.0								3.0	3.0	
Lane Grp Cap (vph)		670								1152	1206	
v/s Ratio Prot		c0.47								0.36	c0.84	
v/s Ratio Perm												
v/c Ratio		1.34								0.61	1.42	
Uniform Delay, d1		46.0								18.5	29.0	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		164.4								0.9	192.3	
Delay (s)		210.4								19.4	221.3	
Level of Service		F								B	F	
Approach Delay (s)		210.4			0.0			0.0			162.5	
Approach LOS		F			A			A			F	

Intersection Summary

HCM Average Control Delay	175.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.5%	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)	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	122	33	392	462	0	0	0	0	339	1740	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	2047	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	2047	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	c1.00	
v/s Ratio Perm												
v/c Ratio		1.04		1.79	1.10					0.35	1.71	
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	322.5	
Delay (s)		128.0		423.6	110.1					15.6	352.0	
Level of Service		F		F	F					B	F	
Approach Delay (s)		128.0			254.0			0.0			297.1	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	270.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.7%	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)	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

HCM Signalized Intersection Capacity Analysis
119: E Church Ave &

4/10/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	597	1390	990	60	59	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1947	3893	3860		1947	1742
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1947	3893	3860		1947	1742
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	649	1511	1076	65	64	660
RTOR Reduction (vph)	0	0	5	0	0	517
Lane Group Flow (vph)	649	1511	1136	0	64	143
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	30.0	61.4	27.4		11.6	11.6
Effective Green, g (s)	30.0	61.4	27.4		11.6	11.6
Actuated g/C Ratio	0.37	0.76	0.34		0.14	0.14
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)	721	2951	1306		279	249
v/s Ratio Prot	c0.33	0.39	c0.29		0.03	
v/s Ratio Perm						c0.08
v/c Ratio	0.90	0.51	0.87		0.23	0.58
Uniform Delay, d1	24.1	3.9	25.1		30.7	32.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.3	0.2	6.6		0.4	3.2
Delay (s)	38.4	4.0	31.7		31.2	35.6
Level of Service	D	A	C		C	D
Approach Delay (s)		14.4	31.7		35.2	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
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)	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)				932		
pX, platoon unblocked					0.56	
vC, conflicting volume			1960		3698	980
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1960		4254	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		0	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		

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)					578							
pX, platoon unblocked	0.56						0.56	0.56		0.56	0.56	0.56
vC, conflicting volume	2592			1683			3031	4295	841	3454	4293	1296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2272			1683			3055	5312	841	3810	5310	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 %	92			100			0	0	0	0	100	94
cM capacity (veh/h)	124			376			3	0	308	0	0	607

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	124	1700	1700	1700	4	0
Volume to Capacity	0.08	0.66	1.02	0.51	172.36	Err
Queue Length 95th (ft)	6	0	0	0	Err	Err
Control Delay (s)	4.9	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	1.6		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		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	298	1326	1661	327	368	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.98		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3507	3452		1770	1583
Flt Permitted		0.49	1.00		0.95	1.00
Satd. Flow (perm)		1737	3452		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	1441	1805	355	400	346
RTOR Reduction (vph)	0	0	13	0	0	34
Lane Group Flow (vph)	0	1765	2147	0	400	312
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)		97.0	97.0		25.0	25.0
Effective Green, g (s)		97.0	97.0		25.0	25.0
Actuated g/C Ratio		0.75	0.75		0.19	0.19
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)		1296	2576		340	304
v/s Ratio Prot			0.62		c0.23	
v/s Ratio Perm		c1.02				0.20
v/c Ratio		5.68dl	0.83		1.18	1.03
Uniform Delay, d1		16.5	11.1		52.5	52.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		167.9	2.5		105.9	58.6
Delay (s)		184.4	13.5		158.4	111.1
Level of Service		F	B		F	F
Approach Delay (s)		184.4	13.5		136.5	
Approach LOS		F	B		F	

Intersection Summary

HCM Average Control Delay	97.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	132.0%	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	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	715	614	587	481	0	0	0	0	897	0	553
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						1714	
Flt Permitted		1.00		0.95	1.00						0.97	
Satd. Flow (perm)		3294		1770	3539						1714	
Peak-hour factor, PHF	0.92	0.92	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	523	0	0	0	0	975	0	601
RTOR Reduction (vph)	0	111	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	1333	0	638	523	0	0	0	0	0	1560	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						808	
v/s Ratio Prot		c0.40		c0.36	0.15							
v/s Ratio Perm											0.91	
v/c Ratio		1.67		1.80	0.31						1.93	
Uniform Delay, d1		53.0		56.0	22.9						37.0	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		305.6		372.1	0.1						423.5	
Delay (s)		358.6		428.1	23.1						460.5	
Level of Service		F		F	C						F	
Approach Delay (s)		358.6			245.6			0.0			460.5	
Approach LOS		F			F			A			F	

Intersection Summary

HCM Average Control Delay	365.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	219.9%	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	540	0	0	736	627	986	0	855	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	587	0	0	800	682	1072	0	929	0	0
RTOR Reduction (vph)	0	0	0	0	103	0	0	0	180	0	0
Lane Group Flow (vph)	836	587	0	0	1379	0	0	1072	749	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	0.17			c0.42						
v/s Ratio Perm								0.61	0.47		
v/c Ratio	1.69	0.29			1.57			1.62	1.27		
Uniform Delay, d1	54.0	16.4			55.0			47.0	47.0		
Progression Factor	1.00	1.00			1.00			1.00	1.00		
Incremental Delay, d2	317.1	0.1			261.7			286.7	133.0		
Delay (s)	371.1	16.4			316.7			333.7	180.0		
Level of Service	F	B			F			F	F		
Approach Delay (s)		224.8			316.7			262.4		0.0	
Approach LOS		F			F			F		A	

Intersection Summary

HCM Average Control Delay	267.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	219.9%	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)	45	1342	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	1459	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				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	1380			1460			2271	2946	730	2197	2918	690
vC1, stage 1 conf vol							1557	1557		1360	1360	
vC2, stage 2 conf vol							714	1389		837	1558	
vCu, unblocked vol	1380			1328			2208	2942	536	2129	2911	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			95	100	98	56	100	89
cM capacity (veh/h)	492			475			106	108	450	137	122	387

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	49	972	487	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	475	1700	1700	208	137	387
Volume to Capacity	0.10	0.57	0.29	0.01	0.52	0.29	0.07	0.44	0.11
Queue Length 95th (ft)	8	0	0	1	0	0	6	50	9
Control Delay (s)	13.1	0.0	0.0	12.6	0.0	0.0	23.7	50.7	15.5
Lane LOS	B			B			C	F	C
Approach Delay (s)	0.4			0.0			23.7	36.0	
Approach LOS							C	E	

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

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

4/9/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Volume (veh/h)	0	729	400	416	2028	0	304	7	284	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	2204	0	330	8	309	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	2204			1227			3522	4336	1102	3020	4118	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2204			1227			3522	4336	1102	3020	4118	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)	235			564			1	0	206	0	0	435

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	NW 1
Volume Total	528	699	1187	1470	647	36
Volume Left	0	0	452	0	330	18
Volume Right	0	435	0	0	309	17
cSH	1700	1700	564	1700	1	0
Volume to Capacity	0.31	0.41	0.80	0.86	478.09	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		14.5		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	152.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (veh/h)	445	593	0	0	1078	766	1359	0	828	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	645	0	0	1172	833	1477	0	900	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			645			2198	3616	322	2878	3200
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	2004			645			2198	3616	322	2878	3200
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	0	0	0
cM capacity (veh/h)	282			936			0	0	673	0	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	699	430	781	1223	1477	900
Volume Left	484	0	0	0	1477	0
Volume Right	0	0	0	833	0	900
cSH	282	1700	1700	1700	0	673
Volume to Capacity	1.72	0.25	0.46	0.72	Err	1.34
Queue Length 95th (ft)	777	0	0	0	Err	934
Control Delay (s)	368.2	0.0	0.0	0.0	Err	180.6
Lane LOS	F				F	F
Approach Delay (s)	228.0		0.0		Err	
Approach LOS					F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	169.0%	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)	290	980	784	24	1108	70	1508	139	17	51	108	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			0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1846			1780			1674	
Flt Permitted	0.24	1.00	1.00	0.24	1.00			0.36			0.99	
Satd. Flow (perm)	438	1863	1583	438	1846			665			1670	
Peak-hour factor, PHF	0.92	0.92	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	151	18	55	117	449
RTOR Reduction (vph)	0	0	486	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	315	1065	366	26	1275	0	0	1807	0	0	613	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			296			742	
v/s Ratio Prot		0.57			0.69							
v/s Ratio Perm	c0.72		0.23	0.06				c2.72			0.37	
v/c Ratio	1.91	1.51	0.61	0.16	1.83			6.11			0.83	
Uniform Delay, d1	14.0	14.0	11.3	9.3	14.0			12.5			11.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	430.8	238.1	1.9	0.4	378.8			2305.1			7.5	
Delay (s)	444.8	252.1	13.2	9.7	392.8			2317.6			18.5	
Level of Service	F	F	B	A	F			F			B	
Approach Delay (s)		188.1			385.2			2317.6			18.5	
Approach LOS		F			F			F			B	

Intersection Summary

HCM Average Control Delay	858.8	HCM Level of Service	F
HCM Volume to Capacity ratio	4.18		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	217.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group