APPENDIX A-1

INTERSECTION SYNCHRO ANALYSIS

INTERSECTION SYNCHRO ANALYSIS

YR-2007 AM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	160	590	110	360	100	1080	310	40	80	540	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1553	1770	3539	1555	1610	3286	1551	1770	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1553	1770	3539	1555	1610	3286	1551	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	178	656	122	400	111	1200	344	44	89	600	467
RTOR Reduction (vph)	0	0	523	0	0	94	0	0	27	0	0	143
Lane Group Flow (vph)	178	178	133	122	400	17	600	944	17	89	600	324
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	14.0	20.2	20.2	10.0	17.0	17.0	44.8	44.8	44.8	23.8	23.8	23.8
Effective Green, g (s)	13.0	21.9	21.9	9.0	17.9	17.9	46.1	46.1	46.1	25.1	25.1	25.1
Actuated g/C Ratio	0.11	0.19	0.19	0.08	0.15	0.15	0.39	0.39	0.39	0.21	0.21	0.21
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	195	656	288	135	536	236	628	1283	605	376	752	332
v/s Ratio Prot	c0.10	0.05		0.07	c0.11		c0.37	0.29		0.05	0.17	
v/s Ratio Perm			c0.09			0.01			0.01			c0.21
v/c Ratio	0.91	0.27	0.46	0.90	0.75	0.07	0.96	0.91dl	0.03	0.24	0.80	0.98
Uniform Delay, d1	52.0	41.3	42.9	54.1	47.9	43.0	35.0	30.8	22.2	38.6	44.1	46.2
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	40.1	0.1	0.4	48.4	4.9	0.0	24.9	1.9	0.0	0.1	5.5	42.7
Delay (s)	92.1	41.3	43.3	102.6	52.9	43.0	59.9	32.7	22.2	38.7	49.6	88.9
Level of Service	F	D	D	F	D	D	E	C	C	D	D	F
Approach Delay (s)		51.5			60.7			42.7			64.6	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM Average Control Delay	53.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	118.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	77.5%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	0	120	0	0	0	150	1230	0	0	1200	120
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	0	133	0	0	0	167	1367	0	0	1333	133
RTOR Reduction (vph)	0	0	116	0	0	0	0	0	0	0	0	22
Lane Group Flow (vph)	0	178	17	0	0	0	167	1367	0	0	1333	111
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		19.0	19.0				14.0	121.5			103.5	103.5
Effective Green, g (s)		19.0	19.0				14.0	123.0			105.0	105.0
Actuated g/C Ratio		0.13	0.13				0.09	0.82			0.70	0.70
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		179	196				165	1528			1304	1086
v/s Ratio Prot							c0.09	0.73			c0.72	
v/s Ratio Perm		c0.13	0.01									0.07
v/c Ratio		0.99	0.09				1.01	0.89			1.02	0.10
Uniform Delay, d1		65.4	57.8				68.0	9.1			22.5	7.3
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		65.3	0.2				73.3	7.1			30.7	0.0
Delay (s)		130.7	58.0				141.3	16.3			53.2	7.3
Level of Service		F	E				F	B			D	A
Approach Delay (s)		99.6			0.0			29.9			49.0	
Approach LOS		F			A			C			D	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Oak Hill Dr & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	430	10	10	10	350	1310	10	10	1280	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1804	1543		1737		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1804	1543		1737		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	11	457	11	11	11	372	1394	11	11	1362	32
RTOR Reduction (vph)	0	0	423	0	11	0	0	0	3	0	0	11
Lane Group Flow (vph)	0	32	34	0	22	0	372	1394	8	11	1362	21
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		7.2	7.2		3.9		24.2	59.5	59.5	3.8	39.1	39.1
Effective Green, g (s)		6.6	6.6		3.3		23.2	61.2	59.5	2.8	40.8	40.8
Actuated g/C Ratio		0.07	0.07		0.04		0.26	0.68	0.66	0.03	0.45	0.45
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		132	113		64		457	2409	1025	55	1606	718
v/s Ratio Prot		0.02			c0.01		c0.21	0.39		0.01	c0.38	
v/s Ratio Perm			c0.02						0.00			0.01
v/c Ratio		0.24	0.30		0.35		0.81	0.58	0.01	0.20	0.85	0.03
Uniform Delay, d1		39.3	39.5		42.3		31.3	7.6	5.2	42.5	21.8	13.6
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	0.5		1.2		10.1	0.2	0.0	0.7	4.2	0.0
Delay (s)		39.6	40.0		43.5		41.4	7.8	5.2	43.1	26.0	13.6
Level of Service		D	D		D		D	A	A	D	C	B
Approach Delay (s)		40.0			43.5			14.8			25.8	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	100	0	0	0	20	1640	0	0	1640	60
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6374	
Flt Permitted			1.00				0.09	1.00			1.00	
Satd. Flow (perm)			2787				163	3539			6374	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	118	0	0	0	24	1929	0	0	1929	71
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	97	0	0	0	24	1929	0	0	1995	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			6.4				45.6	45.6			45.6	
Effective Green, g (s)			6.4				45.6	45.6			45.6	
Actuated g/C Ratio			0.11				0.76	0.76			0.76	
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)			297				124	2690			4844	
v/s Ratio Prot								c0.55			0.31	
v/s Ratio Perm			c0.03				0.15					
v/c Ratio			0.33				0.19	0.72			0.41	
Uniform Delay, d1			24.8				2.0	3.8			2.5	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.6				3.5	1.7			0.3	
Delay (s)			25.4				5.5	5.5			2.8	
Level of Service			C				A	A			A	
Approach Delay (s)		25.4			0.0			5.5			2.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	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	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	20	30	160	20	940	20	690	290	790	880	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	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.91		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1695		1610	2753	1441	1770	3539	1583	3433	3528	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1695		1610	2753	1441	1770	3539	1583	3433	3528	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	22	33	178	22	1044	22	767	322	878	978	22
RTOR Reduction (vph)	0	30	0	0	470	470	0	0	227	0	1	0
Lane Group Flow (vph)	33	25	0	160	92	52	22	767	95	878	999	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	7.9	7.9		9.0	9.0	9.0	2.1	26.6	26.6	29.0	53.5	
Effective Green, g (s)	7.9	7.9		9.0	9.0	9.0	2.1	28.1	26.6	29.0	55.0	
Actuated g/C Ratio	0.09	0.09		0.10	0.10	0.10	0.02	0.31	0.30	0.32	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	155	149		161	275	144	41	1105	468	1106	2156	
v/s Ratio Prot	c0.02	0.01		c0.10	0.03		0.01	c0.22		c0.26	0.28	
v/s Ratio Perm						0.04			0.06			
v/c Ratio	0.21	0.17		0.99	0.85dr	0.36	0.54	0.69	0.20	0.79	0.46	
Uniform Delay, d1	38.2	38.0		40.5	37.7	37.8	43.5	27.2	23.8	27.8	9.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.2		68.7	0.3	0.6	6.6	3.6	1.0	3.7	0.7	
Delay (s)	38.4	38.2		109.2	38.0	38.4	50.1	30.8	24.7	31.5	10.2	
Level of Service	D	D		F	D	D	D	C	C	C	B	
Approach Delay (s)		38.3			47.3			29.4			20.2	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.2%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	10	790	40	10	10	190	840	10	10	980	110
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1644			1758		1770	3532		1770	3478	
Flt Permitted		0.99			0.50		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1644			905		1770	3532		1770	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	11	832	42	11	11	200	884	11	11	1032	116
RTOR Reduction (vph)	0	109	0	0	6	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	913	0	0	58	0	200	894	0	11	1141	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		56.3			56.3		12.3	50.3		0.5	38.5	
Effective Green, g (s)		58.0			58.0		13.0	52.5		1.2	40.7	
Actuated g/C Ratio		0.47			0.47		0.11	0.42		0.01	0.33	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		771			424		186	1499		17	1144	
v/s Ratio Prot		c0.56					c0.11	0.25		0.01	c0.33	
v/s Ratio Perm					0.06							
v/c Ratio		1.18			0.14		1.08	0.60		0.65	1.00	
Uniform Delay, d1		32.8			18.6		55.4	27.4		61.0	41.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		95.9			0.1		87.4	0.7		49.2	25.9	
Delay (s)		128.8			18.8		142.8	28.2		110.2	67.3	
Level of Service		F			B		F	C		F	E	
Approach Delay (s)		128.8			18.8			49.1			67.7	
Approach LOS		F			B			D			E	

Intersection Summary			
HCM Average Control Delay	79.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	123.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	770	830	20	740	470	300	320	10	290	1510	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	233	856	922	22	822	522	333	356	11	322	1678	178
RTOR Reduction (vph)	0	0	116	0	0	377	0	0	8	0	0	58
Lane Group Flow (vph)	233	856	806	22	822	145	333	356	3	322	1678	120
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.9	56.1	56.1	1.2	38.4	38.4	10.5	33.3	33.3	30.4	53.2	53.2
Effective Green, g (s)	19.4	56.6	56.6	1.7	38.9	38.9	11.0	34.8	34.8	30.9	54.7	54.7
Actuated g/C Ratio	0.14	0.40	0.40	0.01	0.28	0.28	0.08	0.25	0.25	0.22	0.39	0.39
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	245	1431	640	21	983	440	270	880	393	391	1383	619
v/s Ratio Prot	c0.13	0.24		0.01	0.23		c0.10	0.10		0.18	c0.47	
v/s Ratio Perm			c0.51			0.09			0.00			0.08
v/c Ratio	0.95	0.60	1.26	1.05	0.84	0.33	1.23	0.40	0.01	0.82	1.21	0.19
Uniform Delay, d1	59.8	32.8	41.7	69.2	47.6	40.2	64.5	43.9	39.6	52.0	42.6	28.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	43.6	0.5	129.0	212.0	6.0	0.2	132.9	1.4	0.0	12.5	102.9	0.7
Delay (s)	103.4	33.2	170.7	281.2	53.6	40.3	197.4	45.3	39.6	64.5	145.5	28.8
Level of Service	F	C	F	F	D	D	F	D	D	E	F	C
Approach Delay (s)		104.4			52.2			117.6			124.0	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	101.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.5%	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)	10	20	20	200	0	160	10	460	200	110	2260	10
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	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1527	1681	1681	1562	1770	4854		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1527	1681	1681	1562	1770	4854		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	22	22	222	0	178	11	511	222	122	2511	11
RTOR Reduction (vph)	0	0	22	0	0	154	0	50	0	0	0	2
Lane Group Flow (vph)	0	33	0	111	111	24	11	683	0	122	2511	9
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		1.6	1.6	14.3	14.3	14.3	0.4	62.6		11.5	73.7	73.7
Effective Green, g (s)		2.1	2.1	14.8	14.8	14.8	0.9	65.1		12.0	76.2	76.2
Actuated g/C Ratio		0.02	0.02	0.13	0.13	0.13	0.01	0.59		0.11	0.69	0.69
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		35	29	226	226	210	14	2873		193	2452	1074
v/s Ratio Prot		c0.02		c0.07	0.07		0.01	0.14		c0.07	c0.71	
v/s Ratio Perm			0.00			0.02						0.01
v/c Ratio		0.94	0.01	0.49	0.49	0.11	0.79	0.24		0.63	1.02	0.01
Uniform Delay, d1		53.9	52.9	44.1	44.1	41.8	54.5	10.7		46.9	16.9	5.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		127.2	0.1	0.6	0.6	0.1	123.8	0.2		4.9	24.6	0.0
Delay (s)		181.1	53.0	44.7	44.7	41.9	178.3	10.9		51.8	41.5	5.2
Level of Service		F	D	D	D	D	F	B		D	D	A
Approach Delay (s)		129.9			43.5			13.3			41.8	
Approach LOS		F			D			B			D	

Intersection Summary			
HCM Average Control Delay	37.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	10	1220	10	10	1060
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3535		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3535		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	1356	11	11	1178
RTOR Reduction (vph)	10	0	0	0	0	0
Lane Group Flow (vph)	12	0	1367	0	11	1178
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	4.9		59.5		3.6	67.1
Effective Green, g (s)	4.9		59.5		3.6	67.1
Actuated g/C Ratio	0.06		0.74		0.04	0.84
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	104		2629		80	1563
v/s Ratio Prot	c0.01		0.39		0.01	c0.63
v/s Ratio Perm						
v/c Ratio	0.11		0.52		0.14	0.75
Uniform Delay, d1	35.5		4.3		36.7	2.8
Progression Factor	1.00		0.64		1.00	1.00
Incremental Delay, d2	0.5		0.7		0.5	3.4
Delay (s)	36.0		3.4		37.2	6.2
Level of Service	D		A		D	A
Approach Delay (s)	36.0		3.4			6.5
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	10	0	1200	990	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3352			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3352			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	11	0	1333	1100	89
RTOR Reduction (vph)	10	0	0	0	0	15
Lane Group Flow (vph)	34	0	0	1333	1100	74
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	5.9			66.1	66.1	66.1
Effective Green, g (s)	5.9			66.1	66.1	66.1
Actuated g/C Ratio	0.07			0.83	0.83	0.83
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	247			2924	1539	1308
v/s Ratio Prot	c0.01			0.38	c0.59	
v/s Ratio Perm						0.05
v/c Ratio	0.14			0.46	0.71	0.06
Uniform Delay, d1	34.7			1.9	2.9	1.3
Progression Factor	1.00			0.24	1.09	1.99
Incremental Delay, d2	0.2			0.4	2.0	0.1
Delay (s)	34.9			0.9	5.3	2.6
Level of Service	C			A	A	A
Approach Delay (s)	34.9			0.9	5.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	3.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	980	10	10	1180	10	10	20	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.97			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1483		3096			1765			1741	
Flt Permitted		0.98	1.00		0.95			0.91			0.89	
Satd. Flow (perm)		1788	1483		2930			1635			1569	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1089	11	11	1311	11	11	22	11	11	11	11
RTOR Reduction (vph)	0	0	2	0	0	0	0	10	0	0	10	0
Lane Group Flow (vph)	0	1100	9	0	1333	0	0	34	0	0	23	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		65.2	65.2		65.2			6.8			6.8	
Effective Green, g (s)		65.2	65.2		65.2			6.8			6.8	
Actuated g/C Ratio		0.82	0.82		0.82			0.08			0.08	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1457	1209		2388			139			133	
v/s Ratio Prot												
v/s Ratio Perm		c0.62	0.01		0.45			c0.02			0.01	
v/c Ratio		0.75	0.01		0.56			0.24			0.17	
Uniform Delay, d1		3.6	1.4		2.5			34.2			34.0	
Progression Factor		0.29	0.22		1.00			1.00			1.00	
Incremental Delay, d2		2.7	0.0		0.9			0.3			0.2	
Delay (s)		3.7	0.3		3.5			34.5			34.2	
Level of Service		A	A		A			C			C	
Approach Delay (s)		3.7			3.5			34.5			34.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	670	10	20	380	20	20	370	80	50	330	800
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	356	744	11	22	422	22	22	411	89	56	367	889
RTOR Reduction (vph)	0	1	0	0	2	0	0	9	0	0	0	87
Lane Group Flow (vph)	356	755	0	22	442	0	22	491	0	56	367	802
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	20.4	46.7		1.2	27.5		1.2	26.5		3.0	28.3	48.7
Effective Green, g (s)	20.4	46.7		1.2	27.5		1.2	26.5		3.0	28.3	48.7
Actuated g/C Ratio	0.22	0.50		0.01	0.29		0.01	0.28		0.03	0.30	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	387	930		23	457		23	514		57	564	893
v/s Ratio Prot	c0.20	0.41		0.01	c0.28		0.01	0.27		c0.03	0.20	c0.20
v/s Ratio Perm												0.31
v/c Ratio	0.92	0.81		0.96	0.97		0.96	0.96		0.98	0.65	0.90
Uniform Delay, d1	35.7	19.6		46.1	32.5		46.1	32.9		45.2	28.3	20.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.0	5.8		165.6	33.5		165.6	28.9		112.1	3.0	11.4
Delay (s)	61.7	25.4		211.6	66.0		211.6	61.7		157.3	31.3	31.5
Level of Service	E	C		F	E		F	E		F	C	C
Approach Delay (s)		37.0			72.9			68.1			36.8	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	93.4	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	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	390	400	180	140	300	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1570	1770	1546
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1570	1770	1546
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	433	444	200	156	333	267
RTOR Reduction (vph)	0	0	0	72	0	198
Lane Group Flow (vph)	433	444	200	84	333	69
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	16.7	28.2	7.5	20.0	12.5	12.5
Effective Green, g (s)	16.7	28.2	7.5	20.0	12.5	12.5
Actuated g/C Ratio	0.34	0.58	0.15	0.41	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	607	1079	545	774	454	397
v/s Ratio Prot	c0.24	c0.24	0.06	0.03	c0.19	
v/s Ratio Perm				0.03		0.04
v/c Ratio	0.71	0.41	0.37	0.11	0.73	0.17
Uniform Delay, d1	13.9	5.7	18.5	8.8	16.6	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.3	0.2	0.0	5.2	0.1
Delay (s)	17.9	5.9	18.6	8.9	21.8	14.2
Level of Service	B	A	B	A	C	B
Approach Delay (s)		11.8	14.4		18.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	50	10	90	30	50	10	650	40	50	1100	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815		1770	1687		1770	1847		1770	1858	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815		1770	1687		1770	1847		1770	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	54	11	97	32	54	11	699	43	54	1183	22
RTOR Reduction (vph)	0	7	0	0	48	0	0	1	0	0	1	0
Lane Group Flow (vph)	22	58	0	97	38	0	11	741	0	54	1204	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	2.1	7.7		7.7	13.3		0.7	72.8		5.7	77.8	
Effective Green, g (s)	1.9	7.5		7.5	13.1		0.5	72.6		5.5	77.6	
Actuated g/C Ratio	0.02	0.07		0.07	0.12		0.00	0.67		0.05	0.71	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	31	125		122	203		8	1229		89	1322	
v/s Ratio Prot	0.01	c0.03		c0.05	0.02		0.01	0.40		c0.03	c0.65	
v/s Ratio Perm												
v/c Ratio	0.71	0.47		0.80	0.19		1.38	0.60		0.61	0.91	
Uniform Delay, d1	53.3	48.9		50.0	43.2		54.3	10.2		50.7	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	46.1	1.0		27.4	0.2		466.9	0.8		7.8	9.7	
Delay (s)	99.5	49.9		77.4	43.4		521.2	11.0		58.5	22.6	
Level of Service	F	D		E	D		F	B		E	C	
Approach Delay (s)		62.4			61.4			18.5			24.1	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
15: City Hall & Natoma St

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	80	10	100	10	700	30	90	1080	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1704		1770	1567		1770	3514		1770	3534	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1704		1770	1567		1770	3514		1770	3534	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	11	11	88	11	110	11	769	33	99	1187	11
RTOR Reduction (vph)	0	10	0	0	94	0	0	3	0	0	0	0
Lane Group Flow (vph)	11	12	0	88	27	0	11	799	0	99	1198	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.4	3.9		4.6	8.1		0.7	23.9		4.9	28.1	
Effective Green, g (s)	0.4	3.9		4.6	8.1		0.7	24.9		4.9	29.1	
Actuated g/C Ratio	0.01	0.07		0.08	0.15		0.01	0.46		0.09	0.54	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	13	122		150	234		23	1611		160	1894	
v/s Ratio Prot	0.01	0.01		c0.05	c0.02		0.01	0.23		c0.06	c0.34	
v/s Ratio Perm												
v/c Ratio	0.85	0.10		0.59	0.12		0.48	0.50		0.62	0.63	
Uniform Delay, d1	26.9	23.6		23.9	20.0		26.6	10.3		23.8	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	162.2	0.1		3.7	0.1		5.6	0.3		4.9	0.7	
Delay (s)	189.1	23.7		27.7	20.1		32.2	10.6		28.7	9.5	
Level of Service	F	C		C	C		C	B		C	A	
Approach Delay (s)		78.8			23.3			10.8			11.0	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
16: Natoma St & Briggs Ranch Dr.

3/1/2010

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	670	100	0	1290	0	200
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	788	118	0	1518	0	235
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			906		1547	788
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			906		1547	788
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	30
cM capacity (veh/h)			747		105	334

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	788	118	759	759	235
Volume Left	0	0	0	0	0
Volume Right	0	118	0	0	235
cSH	1700	1700	1700	1700	334
Volume to Capacity	0.46	0.07	0.45	0.45	0.70
Queue Length 95th (ft)	0	0	0	0	127
Control Delay (s)	0.0	0.0	0.0	0.0	37.9
Lane LOS					E
Approach Delay (s)	0.0		0.0		37.9
Approach LOS					E

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	820	280	1010	780	340	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2724	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2724	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	872	298	1074	830	362	564
RTOR Reduction (vph)	0	208	0	522	0	14
Lane Group Flow (vph)	872	90	1074	308	362	550
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	19.1	19.1	21.9	21.9	8.0	33.9
Effective Green, g (s)	19.6	19.1	23.4	23.4	8.0	35.4
Actuated g/C Ratio	0.31	0.30	0.37	0.37	0.13	0.56
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1068	474	1275	1012	436	889
v/s Ratio Prot	c0.25		c0.31		c0.11	0.35
v/s Ratio Perm		0.06		0.11		
v/c Ratio	0.82	0.19	0.84	0.30	0.83	0.62
Uniform Delay, d1	20.0	16.2	18.1	14.0	26.8	9.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.1	5.2	0.2	12.1	1.3
Delay (s)	24.7	16.3	23.3	14.2	38.9	10.6
Level of Service	C	B	C	B	D	B
Approach Delay (s)	22.6		19.4		21.7	
Approach LOS	C		B		C	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	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)	720	110	50	160	220	60	90	190	130	100	810	1020
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	800	122	56	178	244	67	100	211	144	111	900	1133
RTOR Reduction (vph)	0	0	37	0	0	54	0	0	95	0	0	0
Lane Group Flow (vph)	800	122	19	178	244	13	100	211	49	111	900	1133
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	21.9	29.2	29.2	8.8	16.1	16.1	5.0	29.7	29.7	3.6	27.8	91.3
Effective Green, g (s)	22.4	30.7	30.7	9.3	17.6	17.6	5.5	31.2	31.2	4.1	29.8	91.3
Actuated g/C Ratio	0.25	0.34	0.34	0.10	0.19	0.19	0.06	0.34	0.34	0.04	0.33	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	842	1190	532	350	682	305	207	1209	952	154	1155	1583
v/s Ratio Prot	c0.23	0.03		0.05	0.07		0.03	0.06		0.03	0.25	
v/s Ratio Perm			0.01			0.01			0.02			c0.72
v/c Ratio	0.95	0.10	0.04	0.51	0.36	0.04	0.48	0.17	0.05	0.72	0.78	0.72
Uniform Delay, d1	33.9	20.8	20.4	38.8	31.9	30.0	41.5	21.0	20.1	43.0	27.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.7	0.1	0.0	0.4	0.6	0.1	0.6	0.1	0.0	13.1	3.5	2.8
Delay (s)	53.6	20.9	20.4	39.3	32.5	30.1	42.2	21.2	20.2	56.1	31.3	2.8
Level of Service	D	C	C	D	C	C	D	C	C	E	C	A
Approach Delay (s)		47.6			34.6			25.5			17.5	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	890	70	30	1840	10	80	10	50	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	918	72	31	1897	10	82	10	52	10	10	10
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	47	0	10	0
Lane Group Flow (vph)	10	918	47	31	1907	0	46	46	5	0	20	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.6	54.7	54.7	2.3	56.4		8.6	8.6	8.6		1.8	
Effective Green, g (s)	0.2	56.4	54.7	1.9	58.1		8.4	8.4	8.4		1.6	
Actuated g/C Ratio	0.00	0.67	0.65	0.02	0.69		0.10	0.10	0.10		0.02	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	4	2368	1027	40	2437		168	170	158		33	
v/s Ratio Prot	0.01	0.26		c0.02	c0.54		c0.03	0.03			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	2.50	0.39	0.05	0.78	0.78		0.27	0.27	0.03		0.61	
Uniform Delay, d1	42.0	6.2	5.4	41.0	8.8		35.1	35.1	34.3		41.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	1125.0	0.1	0.0	58.3	1.7		0.9	0.9	0.1		29.4	
Delay (s)	1167.0	6.3	5.4	99.3	10.6		36.0	36.0	34.4		70.5	
Level of Service	F	A	A	F	B		D	D	C		E	
Approach Delay (s)		17.9			12.0			35.4			70.5	
Approach LOS		B			B			D			E	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2007 PM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	390	400	910	120	310	80	800	500	100	160	440	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	433	444	1011	133	344	89	889	556	111	178	489	311
RTOR Reduction (vph)	0	0	381	0	0	71	0	0	79	0	0	263
Lane Group Flow (vph)	433	444	630	133	344	18	471	974	32	178	489	48
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	36.8	53.0	53.0	11.0	28.0	28.0	39.7	39.7	39.7	21.1	21.1	21.1
Effective Green, g (s)	35.8	54.7	54.7	10.0	28.9	28.9	41.0	41.0	41.0	22.4	22.4	22.4
Actuated g/C Ratio	0.25	0.38	0.38	0.07	0.20	0.20	0.28	0.28	0.28	0.16	0.16	0.16
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	440	1343	592	123	710	312	458	944	440	275	550	243
v/s Ratio Prot	c0.24	0.13		0.08	0.10		0.29	c0.29		0.10	c0.14	
v/s Ratio Perm			c0.40			0.01			0.02			0.03
v/c Ratio	0.98	0.33	1.06	1.08	0.48	0.06	1.03	1.03	0.07	0.65	0.89	0.20
Uniform Delay, d1	53.9	31.7	44.7	67.0	51.0	46.6	51.6	51.6	37.7	57.1	59.6	53.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.4	0.1	55.3	104.6	0.2	0.0	49.5	37.8	0.0	3.9	15.7	0.1
Delay (s)	92.2	31.8	100.0	171.7	51.2	46.6	101.1	89.3	37.7	61.0	75.3	53.2
Level of Service	F	C	F	F	D	D	F	F	D	E	E	D
Approach Delay (s)		82.2			78.8			89.2			65.7	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM Average Control Delay	80.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	144.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.2%	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)	100	0	200	0	0	0	130	1350	0	0	1210	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00				1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1546				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1546				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	111	0	222	0	0	0	144	1500	0	0	1344	111
RTOR Reduction (vph)	0	0	150	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	111	72	0	0	0	144	1500	0	0	1344	94
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		15.7	15.7				12.0	121.6			105.6	105.6
Effective Green, g (s)		15.7	15.7				12.0	123.1			107.1	107.1
Actuated g/C Ratio		0.11	0.11				0.08	0.84			0.73	0.73
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		151	165				145	1562			1359	1132
v/s Ratio Prot							0.08	c0.81			c0.72	
v/s Ratio Perm		c0.08	0.05									0.06
v/c Ratio		0.74	0.44				0.99	0.96			0.99	0.08
Uniform Delay, d1		63.5	61.4				67.4	9.8			19.3	5.7
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		16.9	1.8				72.3	14.4			21.5	0.0
Delay (s)		80.4	63.2				139.6	24.3			40.8	5.7
Level of Service		F	E				F	C			D	A
Approach Delay (s)		69.0			0.0			34.4			38.1	
Approach LOS		E			A			C			D	

Intersection Summary			
HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	146.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	350	20	10	20	440	1380	10	10	1260	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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1804	1540		1714		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1804	1540		1714		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	11	372	21	11	21	468	1468	11	11	1340	21
RTOR Reduction (vph)	0	0	348	0	20	0	0	0	3	0	0	7
Lane Group Flow (vph)	0	32	24	0	33	0	468	1468	8	11	1340	14
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		7.3	7.3		5.2		32.3	71.4	71.4	3.8	42.9	42.9
Effective Green, g (s)		6.7	6.7		4.6		31.3	73.1	71.4	2.8	44.6	44.6
Actuated g/C Ratio		0.06	0.06		0.04		0.30	0.71	0.69	0.03	0.43	0.43
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		117	100		76		537	2507	1072	48	1529	684
v/s Ratio Prot		c0.02			c0.02		c0.26	0.41		0.01	c0.38	
v/s Ratio Perm			0.02						0.01			0.01
v/c Ratio		0.27	0.24		0.43		0.87	0.59	0.01	0.23	0.88	0.02
Uniform Delay, d1		45.9	45.8		48.0		34.0	7.5	4.9	49.1	26.8	16.8
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.5		1.4		14.0	0.2	0.0	0.9	5.8	0.0
Delay (s)		46.4	46.3		49.5		48.1	7.7	4.9	50.0	32.6	16.8
Level of Service		D	D		D		D	A	A	D	C	B
Approach Delay (s)		46.3			49.5			17.4			32.5	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	110	0	0	0	60	1750	0	0	1550	60
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6372	
Flt Permitted			1.00				0.09	1.00			1.00	
Satd. Flow (perm)			2787				166	3539			6372	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	129	0	0	0	71	2059	0	0	1824	71
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	102	0	0	0	71	2059	0	0	1890	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			6.5				45.5	45.5			45.5	
Effective Green, g (s)			6.5				45.5	45.5			45.5	
Actuated g/C Ratio			0.11				0.76	0.76			0.76	
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)			302				126	2684			4832	
v/s Ratio Prot								c0.58			0.30	
v/s Ratio Perm			c0.04				0.43					
v/c Ratio			0.34				0.56	0.77			0.39	
Uniform Delay, d1			24.8				3.1	4.2			2.5	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.7				17.0	2.2			0.2	
Delay (s)			25.4				20.0	6.4			2.7	
Level of Service			C				C	A			A	
Approach Delay (s)		25.4			0.0			6.8			2.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	20	40	370	20	890	30	870	230	960	610	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.90		1.00	0.88	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1676		1610	2788	1441	1770	3539	1583	3433	3507	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1676		1610	2788	1441	1770	3539	1583	3433	3507	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	22	44	411	22	989	33	967	256	1067	678	44
RTOR Reduction (vph)	0	41	0	0	403	402	0	0	190	0	2	0
Lane Group Flow (vph)	56	25	0	329	196	92	33	967	66	1067	720	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	10.6	10.6		28.0	28.0	28.0	5.1	38.5	38.5	55.4	88.8	
Effective Green, g (s)	10.6	10.6		28.0	28.0	28.0	5.1	40.0	38.5	55.4	90.3	
Actuated g/C Ratio	0.07	0.07		0.19	0.19	0.19	0.03	0.27	0.26	0.37	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	125	118		301	520	269	60	944	406	1268	2111	
v/s Ratio Prot	c0.03	0.01		c0.20	0.07		0.02	c0.27		c0.31	0.21	
v/s Ratio Perm						0.06			0.04			
v/c Ratio	0.45	0.21		1.09	0.38	0.34	0.55	1.02	0.16	0.84	0.34	
Uniform Delay, d1	66.9	65.8		61.0	53.4	53.0	71.3	55.0	43.2	43.3	14.9	
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	0.9	0.3		79.1	0.2	0.3	6.1	35.6	0.9	5.0	0.4	
Delay (s)	67.8	66.1		140.1	53.5	53.3	77.4	90.6	44.1	48.3	15.4	
Level of Service	E	E		F	D	D	E	F	D	D	B	
Approach Delay (s)		66.9			73.5			80.8			35.0	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM Average Control Delay	60.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	10	560	30	20	10	760	1000	40	10	710	250
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648			1771		1770	3516		1770	3381	
Flt Permitted		0.99			0.53		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648			960		1770	3516		1770	3381	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	11	589	32	21	11	800	1053	42	11	747	263
RTOR Reduction (vph)	0	114	0	0	6	0	0	2	0	0	28	0
Lane Group Flow (vph)	0	633	0	0	58	0	800	1093	0	11	982	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		35.3			35.3		40.3	71.3		0.5	31.5	
Effective Green, g (s)		37.0			37.0		41.0	73.5		1.2	33.7	
Actuated g/C Ratio		0.30			0.30		0.33	0.59		0.01	0.27	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		493			287		587	2089		17	921	
v/s Ratio Prot		c0.38					c0.45	0.31		0.01	c0.29	
v/s Ratio Perm					0.06							
v/c Ratio		1.28			0.20		1.36	0.52		0.65	1.07	
Uniform Delay, d1		43.4			32.3		41.4	14.8		61.0	45.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		143.0			0.3		174.1	0.3		49.2	48.8	
Delay (s)		186.3			32.7		215.4	15.1		110.2	93.8	
Level of Service		F			C		F	B		F	F	
Approach Delay (s)		186.3			32.7			99.7			94.0	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	114.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	123.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	330	640	550	10	880	750	960	1000	10	470	610	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	367	711	611	11	978	833	1067	1111	11	522	678	333
RTOR Reduction (vph)	0	0	173	0	0	313	0	0	7	0	0	159
Lane Group Flow (vph)	367	711	438	11	978	520	1067	1111	4	522	678	174
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.9	57.4	57.4	0.8	39.3	39.3	10.5	32.4	32.4	30.4	52.3	52.3
Effective Green, g (s)	19.4	57.9	57.9	1.3	39.8	39.8	11.0	33.9	33.9	30.9	53.8	53.8
Actuated g/C Ratio	0.14	0.41	0.41	0.01	0.28	0.28	0.08	0.24	0.24	0.22	0.38	0.38
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	245	1464	655	16	1006	450	270	857	383	391	1360	608
v/s Ratio Prot	c0.21	0.20		0.01	0.28		c0.31	c0.31		c0.29	0.19	
v/s Ratio Perm			0.28			c0.33			0.00			0.11
v/c Ratio	1.50	0.49	0.67	0.69	0.97	1.15	3.95	1.30	0.01	1.34	0.50	0.29
Uniform Delay, d1	60.3	30.1	33.3	69.1	49.6	50.1	64.5	53.0	40.3	54.6	32.8	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	1.00
Incremental Delay, d2	244.3	0.1	2.0	67.5	21.7	92.1	1337.2	142.0	0.1	167.3	1.3	1.2
Delay (s)	304.6	30.2	35.3	136.7	71.2	142.2	1401.7	195.1	40.4	221.8	34.1	31.0
Level of Service	F	C	D	F	E	F	F	F	D	F	C	C
Approach Delay (s)		91.7			104.1			782.4			97.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	305.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Forrest St & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	10	150	20	420	20	1540	190	430	750	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	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1531	1681	1704	1561	1770	5002		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1531	1681	1704	1561	1770	5002		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	22	11	167	22	467	22	1711	211	478	833	22
RTOR Reduction (vph)	0	0	11	0	0	396	0	9	0	0	0	6
Lane Group Flow (vph)	0	33	0	94	95	71	22	1913	0	478	833	16
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	14.8	14.8	14.8	3.8	59.6		43.1	98.9	98.9
Effective Green, g (s)		3.0	3.0	15.3	15.3	15.3	4.3	62.1		43.6	101.4	101.4
Actuated g/C Ratio		0.02	0.02	0.11	0.11	0.11	0.03	0.44		0.31	0.72	0.72
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		39	33	184	186	171	54	2219		551	2563	1123
v/s Ratio Prot		c0.02		c0.06	0.06		0.01	c0.38		c0.27	0.24	
v/s Ratio Perm			0.00			0.05						0.01
v/c Ratio		0.85	0.01	0.51	0.51	0.41	0.41	0.86		0.87	0.33	0.01
Uniform Delay, d1		68.3	67.0	58.8	58.8	58.2	66.6	35.1		45.5	7.0	5.4
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.91	0.77	0.80
Incremental Delay, d2		82.5	0.0	1.0	1.0	0.6	1.8	4.7		11.1	0.3	0.0
Delay (s)		150.7	67.1	59.8	59.8	58.8	68.4	39.8		52.6	5.6	4.3
Level of Service		F	E	E	E	E	E	D		D	A	A
Approach Delay (s)		129.8			59.1			40.1			22.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	20	20	1620	20	10	1110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3533		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3533		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	22	1800	22	11	1233
RTOR Reduction (vph)	20	0	0	0	0	0
Lane Group Flow (vph)	24	0	1822	0	11	1233
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.5		67.9		3.6	75.5
Effective Green, g (s)	6.5		67.9		3.6	75.5
Actuated g/C Ratio	0.07		0.75		0.04	0.84
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	122		2665		71	1563
v/s Ratio Prot	c0.01		0.52		0.01	c0.66
v/s Ratio Perm						
v/c Ratio	0.19		0.68		0.15	0.79
Uniform Delay, d1	39.3		5.6		41.7	3.5
Progression Factor	1.00		0.72		1.00	1.00
Incremental Delay, d2	0.8		1.2		0.7	4.1
Delay (s)	40.1		5.2		42.4	7.6
Level of Service	D		A		D	A
Approach Delay (s)	40.1		5.2			7.9
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	20	0	1450	1060	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3408			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3408			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	211	22	0	1611	1178	78
RTOR Reduction (vph)	10	0	0	0	0	17
Lane Group Flow (vph)	223	0	0	1611	1178	61
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	11.6			70.4	70.4	70.4
Effective Green, g (s)	11.6			70.4	70.4	70.4
Actuated g/C Ratio	0.13			0.78	0.78	0.78
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	439			2768	1457	1238
v/s Ratio Prot	c0.07			0.46	c0.63	
v/s Ratio Perm						0.04
v/c Ratio	0.51			0.58	0.81	0.05
Uniform Delay, d1	36.5			3.9	5.8	2.2
Progression Factor	1.00			0.29	0.88	1.70
Incremental Delay, d2	0.8			0.6	3.3	0.0
Delay (s)	37.4			1.8	8.4	3.8
Level of Service	D			A	A	A
Approach Delay (s)	37.4			1.8	8.1	
Approach LOS	D			A	A	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1040	30	10	1380	20	30	100	50	40	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1479		3093			1765			1742	
Flt Permitted		0.98	1.00		0.95			0.93			0.70	
Satd. Flow (perm)		1780	1479		2927			1656			1238	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1156	33	11	1533	22	33	111	56	44	44	44
RTOR Reduction (vph)	0	0	8	0	1	0	0	17	0	0	22	0
Lane Group Flow (vph)	0	1167	25	0	1565	0	0	183	0	0	110	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		67.7	67.7		67.7			14.3			14.3	
Effective Green, g (s)		67.7	67.7		67.7			14.3			14.3	
Actuated g/C Ratio		0.75	0.75		0.75			0.16			0.16	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1339	1113		2202			263			197	
v/s Ratio Prot												
v/s Ratio Perm		c0.66	0.02		0.53			c0.11			0.09	
v/c Ratio		0.87	0.02		0.71			0.70			0.56	
Uniform Delay, d1		8.0	2.8		5.9			35.8			34.9	
Progression Factor		0.30	0.13		1.00			1.00			1.00	
Incremental Delay, d2		4.8	0.0		2.0			6.3			2.0	
Delay (s)		7.2	0.4		7.9			42.1			36.9	
Level of Service		A	A		A			D			D	
Approach Delay (s)		7.0			7.9			42.1			36.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	610	20	40	720	10	20	440	110	100	340	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	556	678	22	44	800	11	22	489	122	111	378	744
RTOR Reduction (vph)	0	1	0	0	1	0	0	6	0	0	0	33
Lane Group Flow (vph)	556	699	0	44	810	0	22	605	0	111	378	711
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	32.0	81.2		6.6	55.8		1.8	41.6		7.0	46.8	78.8
Effective Green, g (s)	32.0	81.2		6.6	55.8		1.8	41.6		7.0	46.8	78.8
Actuated g/C Ratio	0.21	0.53		0.04	0.37		0.01	0.27		0.05	0.31	0.52
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	372	988		77	572		21	493		81	572	860
v/s Ratio Prot	c0.31	0.38		0.02	c0.52		0.01	c0.33		c0.06	0.20	0.17
v/s Ratio Perm												0.28
v/c Ratio	1.49	0.71		0.57	1.42		1.05	1.23		1.37	0.66	0.83
Uniform Delay, d1	60.2	26.7		71.5	48.3		75.3	55.4		72.7	45.9	31.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	236.4	2.5		6.2	197.7		212.0	119.3		227.0	3.2	6.2
Delay (s)	296.6	29.2		77.7	246.0		287.3	174.7		299.7	49.1	37.3
Level of Service	F	C		E	F		F	F		F	D	D
Approach Delay (s)		147.6			237.3			178.6			64.5	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	146.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	320	480	410	230	170	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1566	1770	1544
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1566	1770	1544
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	356	533	456	256	189	378
RTOR Reduction (vph)	0	0	0	59	0	299
Lane Group Flow (vph)	356	533	456	197	189	79
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	12.4	25.9	9.5	18.5	9.0	9.0
Effective Green, g (s)	12.4	25.9	9.5	18.5	9.0	9.0
Actuated g/C Ratio	0.29	0.60	0.22	0.43	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	512	1125	784	821	371	324
v/s Ratio Prot	c0.20	c0.29	0.13	0.05	c0.11	
v/s Ratio Perm				0.08		0.05
v/c Ratio	0.70	0.47	0.58	0.24	0.51	0.24
Uniform Delay, d1	13.6	4.7	14.9	7.7	15.0	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.3	0.7	0.1	0.4	0.1
Delay (s)	17.7	5.0	15.6	7.8	15.4	14.3
Level of Service	B	A	B	A	B	B
Approach Delay (s)		10.1	12.8		14.6	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	50	10	240	100	130	10	910	30	60	860	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815		1770	1705		1770	1854		1770	1844	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815		1770	1705		1770	1854		1770	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	54	11	258	108	140	11	978	32	65	925	65
RTOR Reduction (vph)	0	6	0	0	38	0	0	1	0	0	2	0
Lane Group Flow (vph)	32	59	0	258	210	0	11	1009	0	65	988	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.6	8.7		19.5	24.6		0.8	71.5		5.9	76.6	
Effective Green, g (s)	3.4	8.5		19.3	24.4		0.6	71.3		5.7	76.4	
Actuated g/C Ratio	0.03	0.07		0.16	0.20		0.00	0.59		0.05	0.63	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	50	128		283	344		9	1094		84	1166	
v/s Ratio Prot	0.02	0.03		c0.15	c0.12		0.01	c0.54		c0.04	0.54	
v/s Ratio Perm												
v/c Ratio	0.64	0.46		0.91	0.61		1.22	0.92		0.77	0.85	
Uniform Delay, d1	58.1	54.0		49.9	43.9		60.1	22.3		56.9	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.0	1.0		30.9	2.3		385.4	12.6		32.3	5.9	
Delay (s)	77.1	54.9		80.8	46.2		445.5	34.9		89.2	23.5	
Level of Service	E	D		F	D		F	C		F	C	
Approach Delay (s)		62.2			63.8			39.3			27.5	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM Average Control Delay	40.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	30	10	180	10	180	10	970	60	90	770	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784		1770	1558		1770	3503		1770	3531	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1784		1770	1558		1770	3503		1770	3531	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	22	33	11	198	11	198	11	1066	66	99	846	11
RTOR Reduction (vph)	0	10	0	0	124	0	0	5	0	0	1	0
Lane Group Flow (vph)	22	34	0	198	85	0	11	1127	0	99	856	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.0	6.2		9.9	15.1		0.5	28.4		5.2	33.1	
Effective Green, g (s)	1.0	6.2		9.9	15.1		0.5	29.4		5.2	34.1	
Actuated g/C Ratio	0.01	0.09		0.15	0.23		0.01	0.44		0.08	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	27	166		263	353		13	1544		138	1805	
v/s Ratio Prot	0.01	0.02		c0.11	c0.05		0.01	c0.32		c0.06	0.24	
v/s Ratio Perm												
v/c Ratio	0.81	0.20		0.75	0.24		0.85	0.73		0.72	0.47	
Uniform Delay, d1	32.8	28.0		27.2	21.1		33.1	15.4		30.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	91.8	0.2		10.3	0.1		162.2	1.8		13.7	0.2	
Delay (s)	124.6	28.2		37.5	21.2		195.3	17.2		43.8	10.7	
Level of Service	F	C		D	C		F	B		D	B	
Approach Delay (s)		60.3			29.2			18.9			14.1	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1050	100	0	1030	0	360
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1235	118	0	1212	0	424
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1353		1841	1235
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1353		1841	1235
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			505		67	168

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1235	118	606	606	424
Volume Left	0	0	0	0	0
Volume Right	0	118	0	0	424
cSH	1700	1700	1700	1700	168
Volume to Capacity	0.73	0.07	0.36	0.36	2.52
Queue Length 95th (ft)	0	0	0	0	908
Control Delay (s)	0.0	0.0	0.0	0.0	745.3
Lane LOS					F
Approach Delay (s)	0.0		0.0		745.3
Approach LOS					F

Intersection Summary			
Average Delay	105.6		
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	920	290	740	740	540	870
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2723	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2723	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	979	309	787	787	574	926
RTOR Reduction (vph)	0	216	0	530	0	6
Lane Group Flow (vph)	979	93	787	257	574	920
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	21.0	21.0	21.3	21.3	13.6	38.9
Effective Green, g (s)	21.5	21.0	22.8	22.8	13.6	40.4
Actuated g/C Ratio	0.31	0.30	0.33	0.33	0.19	0.58
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1056	470	1120	888	668	915
v/s Ratio Prot	c0.29		0.23		0.17	c0.58
v/s Ratio Perm		0.06		0.09		
v/c Ratio	0.93	0.20	0.70	0.29	0.86	1.01
Uniform Delay, d1	23.4	18.2	20.6	17.5	27.2	14.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.2	0.1	2.0	0.2	10.3	31.1
Delay (s)	36.7	18.3	22.6	17.7	37.6	45.9
Level of Service	D	B	C	B	D	D
Approach Delay (s)	32.2		20.2		42.7	
Approach LOS	C		C		D	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1000	180	60	160	140	120	80	830	130	100	380	790
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1111	200	67	178	156	133	89	922	144	111	422	878
RTOR Reduction (vph)	0	0	38	0	0	65	0	0	76	0	0	0
Lane Group Flow (vph)	1111	200	29	178	156	68	89	922	68	111	422	878
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	46.2	51.7	51.7	10.3	15.8	15.8	6.9	37.1	37.1	5.0	34.7	124.1
Effective Green, g (s)	46.7	53.2	53.2	10.8	17.3	17.3	7.4	38.6	38.6	5.5	36.7	124.1
Actuated g/C Ratio	0.38	0.43	0.43	0.09	0.14	0.14	0.06	0.31	0.31	0.04	0.30	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1292	1517	679	299	493	221	205	1101	867	152	1047	1583
v/s Ratio Prot	c0.32	0.06		0.05	0.04		0.03	c0.26		0.03	0.12	
v/s Ratio Perm			0.02			0.04			0.02			c0.55
v/c Ratio	0.86	0.13	0.04	0.60	0.32	0.31	0.43	0.84	0.08	0.73	0.40	0.55
Uniform Delay, d1	35.7	21.5	20.6	54.5	48.1	48.0	56.3	39.8	30.2	58.6	34.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	0.1	0.0	2.1	0.6	1.4	0.5	6.2	0.1	14.3	0.3	1.4
Delay (s)	41.4	21.5	20.7	56.7	48.7	49.4	56.9	46.0	30.3	72.9	35.3	1.4
Level of Service	D	C	C	E	D	D	E	D	C	E	D	A
Approach Delay (s)		37.5			51.9			44.9			17.2	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	124.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1880	60	70	1210	10	50	10	70	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	1938	62	72	1247	10	52	10	72	10	10	10
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	66	0	10	0
Lane Group Flow (vph)	10	1938	47	72	1257	0	31	31	6	0	20	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.7	62.4	62.4	5.8	67.5		8.3	8.3	8.3		2.8	
Effective Green, g (s)	0.3	64.1	62.4	5.4	69.2		8.1	8.1	8.1		2.6	
Actuated g/C Ratio	0.00	0.67	0.65	0.06	0.72		0.08	0.08	0.08		0.03	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	6	2358	1027	99	2543		142	144	133		47	
v/s Ratio Prot	0.01	c0.55		c0.04	0.36		c0.02	0.02			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	1.67	0.82	0.05	0.73	0.49		0.22	0.22	0.05		0.43	
Uniform Delay, d1	48.0	11.8	6.1	44.7	5.9		41.1	41.1	40.5		46.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	647.5	2.5	0.0	20.8	0.2		0.8	0.8	0.1		6.5	
Delay (s)	695.4	14.3	6.1	65.4	6.0		41.9	41.9	40.6		52.5	
Level of Service	F	B	A	E	A		D	D	D		D	
Approach Delay (s)		17.4			9.3			41.2			52.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2010 NO-BUILD AM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	175	645	120	393	109	1180	339	44	87	590	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1553	1770	3539	1554	1610	3286	1548	1770	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1553	1770	3539	1554	1610	3286	1548	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	194	194	717	133	437	121	1311	377	49	97	656	510
RTOR Reduction (vph)	0	0	524	0	0	103	0	0	29	0	0	139
Lane Group Flow (vph)	194	194	193	133	437	18	655	1033	20	97	656	371
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	17.0	24.3	24.3	12.0	20.1	20.1	56.2	56.2	56.2	30.1	30.1	30.1
Effective Green, g (s)	16.0	26.0	26.0	11.0	21.0	21.0	57.5	57.5	57.5	31.4	31.4	31.4
Actuated g/C Ratio	0.11	0.18	0.18	0.08	0.15	0.15	0.41	0.41	0.41	0.22	0.22	0.22
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	200	648	285	137	524	230	652	1332	627	392	783	346
v/s Ratio Prot	c0.11	0.05		0.08	c0.12		c0.41	0.31		0.05	0.19	
v/s Ratio Perm			0.12			0.01			0.01			c0.24
v/c Ratio	0.97	0.30	0.68	0.97	0.83	0.08	1.00	0.96dl	0.03	0.25	0.84	1.07
Uniform Delay, d1	62.7	50.1	54.0	65.3	58.8	52.1	42.2	36.6	25.4	45.5	52.8	55.2
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	54.6	0.1	4.9	67.4	10.5	0.1	36.4	2.6	0.0	0.1	7.5	68.6
Delay (s)	117.3	50.2	58.9	132.7	69.3	52.2	78.6	39.2	25.4	45.6	60.3	123.8
Level of Service	F	D	E	F	E	D	E	D	C	D	E	F
Approach Delay (s)		67.6			78.5			53.7			84.8	
Approach LOS		E			E			D			F	

Intersection Summary			
HCM Average Control Delay	68.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	141.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.4%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	0	131	0	0	0	164	1344	0	0	1311	131
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	194	0	146	0	0	0	182	1493	0	0	1457	146
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	22
Lane Group Flow (vph)	0	194	18	0	0	0	182	1493	0	0	1457	124
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		19.0	19.0				13.0	121.5			104.5	104.5
Effective Green, g (s)		19.0	19.0				13.0	123.0			106.0	106.0
Actuated g/C Ratio		0.13	0.13				0.09	0.82			0.71	0.71
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		179	196				153	1528			1317	1096
v/s Ratio Prot							c0.10	0.80			c0.78	
v/s Ratio Perm		c0.14	0.01									0.08
v/c Ratio		1.08	0.09				1.19	0.98			1.11	0.11
Uniform Delay, d1		65.5	57.9				68.5	12.2			22.0	7.0
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		91.4	0.2				132.7	17.6			59.3	0.0
Delay (s)		156.9	58.1				201.2	29.9			81.3	7.0
Level of Service		F	E				F	C			F	A
Approach Delay (s)		114.5			0.0			48.5			74.5	
Approach LOS		F			A			D			E	

Intersection Summary			
HCM Average Control Delay	66.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	11	470	11	11	11	382	1431	11	11	1399	33
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1803	1545		1736		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1803	1545		1736		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	23	12	500	12	12	12	406	1522	12	12	1488	35
RTOR Reduction (vph)	0	0	393	0	12	0	0	0	3	0	0	11
Lane Group Flow (vph)	0	35	107	0	24	0	406	1522	9	12	1488	24
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		11.1	11.1		4.0		30.0	74.5	74.5	3.9	48.4	48.4
Effective Green, g (s)		10.5	10.5		3.4		29.0	76.2	74.5	2.9	50.1	50.1
Actuated g/C Ratio		0.10	0.10		0.03		0.27	0.70	0.68	0.03	0.46	0.46
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		174	149		54		471	2474	1059	47	1627	728
v/s Ratio Prot		0.02			c0.01		c0.23	0.43		0.01	c0.42	
v/s Ratio Perm			c0.07						0.01			0.02
v/c Ratio		0.20	0.72		0.45		0.86	0.62	0.01	0.26	0.91	0.03
Uniform Delay, d1		45.4	47.8		51.9		38.1	8.7	5.5	52.0	27.5	16.2
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2	12.8		2.2		14.5	0.3	0.0	1.0	8.2	0.0
Delay (s)		45.6	60.6		54.1		52.6	9.0	5.5	53.0	35.6	16.2
Level of Service		D	E		D		D	A	A	D	D	B
Approach Delay (s)		59.6			54.1			18.1			35.3	
Approach LOS		E			D			B			D	

Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	109	0	0	0	22	1792	0	0	1792	66
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6374	
Flt Permitted			1.00				0.08	1.00			1.00	
Satd. Flow (perm)			2787				148	3539			6374	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	128	0	0	0	26	2108	0	0	2108	78
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	110	0	0	0	26	2108	0	0	2181	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			6.8				50.2	50.2			50.2	
Effective Green, g (s)			6.8				50.2	50.2			50.2	
Actuated g/C Ratio			0.10				0.77	0.77			0.77	
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)			292				114	2733			4923	
v/s Ratio Prot								c0.60			0.34	
v/s Ratio Perm			c0.04				0.18					
v/c Ratio			0.38				0.23	0.77			0.44	
Uniform Delay, d1			27.1				2.0	4.2			2.6	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.8				4.6	2.2			0.3	
Delay (s)			27.9				6.6	6.3			2.9	
Level of Service			C				A	A			A	
Approach Delay (s)		27.9			0.0			6.3			2.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	22	33	175	22	1027	22	754	317	863	962	22
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	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.91		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1693		1610	2753	1441	1770	3539	1583	3433	3528	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1693		1610	2753	1441	1770	3539	1583	3433	3528	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	24	37	194	24	1141	24	838	352	959	1069	24
RTOR Reduction (vph)	0	34	0	0	506	505	0	0	239	0	1	0
Lane Group Flow (vph)	37	27	0	175	108	65	24	838	113	959	1092	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	8.2	8.2		12.5	12.5	12.5	3.2	35.3	35.3	36.5	68.6	
Effective Green, g (s)	8.2	8.2		12.5	12.5	12.5	3.2	36.8	35.3	36.5	70.1	
Actuated g/C Ratio	0.07	0.07		0.11	0.11	0.11	0.03	0.33	0.32	0.33	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	132	126		183	313	164	51	1184	508	1139	2248	
v/s Ratio Prot	c0.02	0.02		c0.11	0.04		0.01	c0.24		c0.28	0.31	
v/s Ratio Perm						0.04			0.07			
v/c Ratio	0.28	0.21		0.96	0.85dr	0.39	0.47	0.71	0.22	0.84	0.49	
Uniform Delay, d1	48.1	47.9		48.5	45.0	45.2	52.6	31.9	27.3	34.1	10.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.3		53.0	0.2	0.6	2.5	3.6	1.0	5.6	0.8	
Delay (s)	48.5	48.2		101.5	45.2	45.8	55.1	35.5	28.3	39.6	11.2	
Level of Service	D	D		F	D	D	E	D	C	D	B	
Approach Delay (s)		48.3			52.7			33.8			24.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	11	863	44	11	11	208	918	11	11	1071	120
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1644			1758		1770	3532		1770	3478	
Flt Permitted		0.99			0.45		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1644			809		1770	3532		1770	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	12	908	46	12	12	219	966	12	12	1127	126
RTOR Reduction (vph)	0	107	0	0	5	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	1009	0	0	65	0	219	977	0	12	1248	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		73.3			73.3		15.3	61.4		1.6	47.7	
Effective Green, g (s)		75.0			75.0		16.0	63.6		2.3	49.9	
Actuated g/C Ratio		0.49			0.49		0.10	0.42		0.02	0.33	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		806			397		185	1469		27	1135	
v/s Ratio Prot		c0.61					c0.12	0.28		0.01	c0.36	
v/s Ratio Perm					0.08							
v/c Ratio		1.25			0.16		1.18	0.67		0.44	1.10	
Uniform Delay, d1		38.9			21.6		68.4	36.1		74.7	51.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		123.5			0.2		124.4	1.2		4.2	58.1	
Delay (s)		162.5			21.8		192.8	37.3		78.9	109.6	
Level of Service		F			C		F	D		E	F	
Approach Delay (s)		162.5			21.8			65.8			109.3	
Approach LOS		F			C			E			F	

Intersection Summary			
HCM Average Control Delay	109.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	152.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	841	907	22	809	514	328	350	11	317	1650	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	254	934	1008	24	899	571	364	389	12	352	1833	194
RTOR Reduction (vph)	0	0	102	0	0	360	0	0	9	0	0	55
Lane Group Flow (vph)	254	934	906	24	899	211	364	389	3	352	1833	139
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	20.9	58.8	58.8	1.6	39.5	39.5	9.5	35.5	35.5	30.1	56.1	56.1
Effective Green, g (s)	21.4	59.3	59.3	2.1	40.0	40.0	10.0	37.0	37.0	30.6	57.6	57.6
Actuated g/C Ratio	0.15	0.41	0.41	0.01	0.28	0.28	0.07	0.26	0.26	0.21	0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	261	1447	647	26	976	437	237	903	404	374	1406	629
v/s Ratio Prot	c0.14	0.26		0.01	0.25		c0.11	0.11		0.20	c0.52	
v/s Ratio Perm			c0.57			0.13			0.00			0.09
v/c Ratio	0.97	0.65	1.40	0.92	0.92	0.48	1.54	0.43	0.01	0.94	1.30	0.22
Uniform Delay, d1	61.5	34.4	42.8	71.4	51.0	43.9	67.5	45.2	40.3	56.3	43.7	28.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.8	0.7	189.6	140.5	13.4	0.3	261.2	1.5	0.0	31.4	142.0	0.8
Delay (s)	109.3	35.2	232.5	211.9	64.4	44.2	328.7	46.7	40.3	87.7	185.7	29.7
Level of Service	F	D	F	F	E	D	F	D	D	F	F	C
Approach Delay (s)		134.3			59.0			180.8			158.4	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	131.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.1%	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)	11	22	22	219	0	175	11	503	219	120	2470	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1529	1681	1681	1561	1770	4854		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1529	1681	1681	1561	1770	4854		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	24	24	243	0	194	12	559	243	133	2744	12
RTOR Reduction (vph)	0	0	24	0	0	127	0	39	0	0	0	2
Lane Group Flow (vph)	0	36	0	121	122	67	12	763	0	133	2744	10
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	17.0	17.0	17.0	1.7	95.3		15.2	108.8	108.8
Effective Green, g (s)		3.0	3.0	17.5	17.5	17.5	2.2	97.8		15.7	111.3	111.3
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.01	0.65		0.10	0.74	0.74
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	196	196	182	26	3165		185	2626	1150
v/s Ratio Prot		c0.02		0.07	c0.07		0.01	0.16		c0.08	c0.78	
v/s Ratio Perm			0.00			0.04						0.01
v/c Ratio		0.97	0.02	0.62	0.62	0.37	0.46	0.24		0.72	1.04	0.01
Uniform Delay, d1		73.5	72.1	63.1	63.1	61.1	73.3	10.8		65.0	19.4	5.0
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		136.0	0.1	4.0	4.4	0.5	4.7	0.2		10.6	30.7	0.0
Delay (s)		209.5	72.1	67.1	67.5	61.6	78.0	11.0		75.6	50.1	5.0
Level of Service		F	E	E	E	E	E	B		E	D	A
Approach Delay (s)		154.5			64.8			11.9			51.1	
Approach LOS		F			E			B			D	

Intersection Summary			
HCM Average Control Delay	46.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	11	1333	11	11	1158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3535		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3535		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	12	1481	12	12	1287
RTOR Reduction (vph)	11	0	0	0	0	0
Lane Group Flow (vph)	13	0	1493	0	12	1287
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	5.0		59.4		3.6	67.0
Effective Green, g (s)	5.0		59.4		3.6	67.0
Actuated g/C Ratio	0.06		0.74		0.04	0.84
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	106		2625		80	1560
v/s Ratio Prot	c0.01		0.42		0.01	c0.69
v/s Ratio Perm						
v/c Ratio	0.12		0.57		0.15	0.82
Uniform Delay, d1	35.4		4.6		36.7	3.4
Progression Factor	1.00		0.77		1.00	1.00
Incremental Delay, d2	0.5		0.8		0.6	5.1
Delay (s)	35.9		4.3		37.3	8.5
Level of Service	D		A		D	A
Approach Delay (s)	35.9		4.3			8.8
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	33	11	0	1311	1082	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3354			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3354			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	12	0	1457	1202	97
RTOR Reduction (vph)	11	0	0	0	0	17
Lane Group Flow (vph)	38	0	0	1457	1202	80
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	6.0			66.0	66.0	66.0
Effective Green, g (s)	6.0			66.0	66.0	66.0
Actuated g/C Ratio	0.08			0.82	0.82	0.82
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	252			2920	1537	1306
v/s Ratio Prot	c0.01			0.41	c0.65	
v/s Ratio Perm						0.05
v/c Ratio	0.15			0.50	0.78	0.06
Uniform Delay, d1	34.6			2.1	3.5	1.3
Progression Factor	1.00			0.23	1.13	2.15
Incremental Delay, d2	0.2			0.5	2.6	0.1
Delay (s)	34.9			1.0	6.5	2.8
Level of Service	C			A	A	A
Approach Delay (s)	34.9			1.0	6.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	4.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1071	11	11	1289	11	11	22	11	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.97			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1483		3096			1765			1741	
Flt Permitted		0.98	1.00		0.94			0.91			0.88	
Satd. Flow (perm)		1783	1483		2924			1633			1565	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	1190	12	12	1432	12	12	24	12	12	12	12
RTOR Reduction (vph)	0	0	2	0	0	0	0	11	0	0	11	0
Lane Group Flow (vph)	0	1202	10	0	1456	0	0	37	0	0	25	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		65.1	65.1		65.1			6.9			6.9	
Effective Green, g (s)		65.1	65.1		65.1			6.9			6.9	
Actuated g/C Ratio		0.81	0.81		0.81			0.09			0.09	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1451	1207		2379			141			135	
v/s Ratio Prot												
v/s Ratio Perm		c0.67	0.01		0.50			c0.02			0.02	
v/c Ratio		0.83	0.01		0.61			0.26			0.19	
Uniform Delay, d1		4.3	1.4		2.8			34.2			33.9	
Progression Factor		0.28	0.21		1.00			1.00			1.00	
Incremental Delay, d2		3.7	0.0		1.2			0.4			0.2	
Delay (s)		4.9	0.3		3.9			34.5			34.2	
Level of Service		A	A		A			C			C	
Approach Delay (s)		4.9			3.9			34.5			34.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	732	11	22	415	22	22	404	87	55	361	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	813	12	24	461	24	24	449	97	61	401	971
RTOR Reduction (vph)	0	0	0	0	1	0	0	7	0	0	0	53
Lane Group Flow (vph)	389	825	0	24	484	0	24	539	0	61	401	918
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	27.2	57.0		1.8	31.6		1.2	33.6		4.0	36.4	63.6
Effective Green, g (s)	27.2	57.0		1.8	31.6		1.2	33.6		4.0	36.4	63.6
Actuated g/C Ratio	0.24	0.51		0.02	0.28		0.01	0.30		0.04	0.32	0.57
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	428	943		28	437		19	542		63	603	952
v/s Ratio Prot	0.22	0.44		0.01	c0.31		0.01	0.30		c0.03	0.22	c0.23
v/s Ratio Perm												0.35
v/c Ratio	0.91	0.87		0.86	1.11		1.26	0.99		0.97	0.67	0.96
Uniform Delay, d1	41.4	24.5		55.2	40.4		55.6	39.3		54.1	32.7	23.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	22.3	9.4		106.2	75.2		298.7	37.1		100.6	3.1	20.7
Delay (s)	63.7	33.9		161.4	115.6		354.3	76.4		154.7	35.8	44.0
Level of Service	E	C		F	F		F	E		F	D	D
Approach Delay (s)		43.4			117.8			88.1			46.4	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM Average Control Delay	61.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	426	437	197	153	328	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1570	1770	1546
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1570	1770	1546
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	473	486	219	170	364	291
RTOR Reduction (vph)	0	0	0	58	0	214
Lane Group Flow (vph)	473	486	219	112	364	77
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	17.4	29.2	7.8	21.1	13.3	13.3
Effective Green, g (s)	17.4	29.2	7.8	21.1	13.3	13.3
Actuated g/C Ratio	0.34	0.58	0.15	0.42	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	610	1077	547	780	466	407
v/s Ratio Prot	c0.27	c0.26	0.06	0.04	c0.21	
v/s Ratio Perm				0.03		0.05
v/c Ratio	0.78	0.45	0.40	0.14	0.78	0.19
Uniform Delay, d1	14.8	6.1	19.2	9.1	17.3	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.3	0.2	0.0	7.7	0.1
Delay (s)	21.0	6.4	19.4	9.1	24.9	14.5
Level of Service	C	A	B	A	C	B
Approach Delay (s)		13.6	14.9		20.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	55	11	98	33	55	11	710	44	55	1202	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1816		1770	1687		1770	1847		1770	1858	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1816		1770	1687		1770	1847		1770	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	24	59	12	105	35	59	12	763	47	59	1292	24
RTOR Reduction (vph)	0	6	0	0	42	0	0	1	0	0	0	0
Lane Group Flow (vph)	24	65	0	105	52	0	12	809	0	59	1316	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.5	9.5		9.9	15.9		0.9	99.5		6.8	105.4	
Effective Green, g (s)	3.3	9.3		9.7	15.7		0.7	99.3		6.6	105.2	
Actuated g/C Ratio	0.02	0.07		0.07	0.11		0.00	0.70		0.05	0.75	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	41	120		122	188		9	1302		83	1387	
v/s Ratio Prot	0.01	c0.04		c0.06	0.03		0.01	0.44		c0.03	c0.71	
v/s Ratio Perm												
v/c Ratio	0.59	0.54		0.86	0.28		1.33	0.62		0.71	0.95	
Uniform Delay, d1	68.1	63.8		64.9	57.4		70.1	10.9		66.2	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.0	2.7		41.2	0.3		429.4	0.9		21.1	13.7	
Delay (s)	81.1	66.4		106.1	57.7		499.5	11.9		87.3	29.2	
Level of Service	F	E		F	E		F	B		F	C	
Approach Delay (s)		70.1			83.2			19.0			31.7	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	11	11	87	11	109	11	765	33	98	1180	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1703		1770	1567		1770	3514		1770	3534	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1703		1770	1567		1770	3514		1770	3534	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	12	12	12	96	12	120	12	841	36	108	1297	12
RTOR Reduction (vph)	0	11	0	0	102	0	0	3	0	0	0	0
Lane Group Flow (vph)	12	13	0	96	30	0	12	874	0	108	1309	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.4	3.7		5.4	8.7		0.7	26.0		5.8	31.1	
Effective Green, g (s)	0.4	3.7		5.4	8.7		0.7	27.0		5.8	32.1	
Actuated g/C Ratio	0.01	0.06		0.09	0.15		0.01	0.47		0.10	0.55	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	12	109		165	235		21	1639		177	1959	
v/s Ratio Prot	0.01	0.01		c0.05	c0.02		0.01	0.25		c0.06	c0.37	
v/s Ratio Perm												
v/c Ratio	1.00	0.12		0.58	0.13		0.57	0.53		0.61	0.67	
Uniform Delay, d1	28.8	25.6		25.2	21.3		28.5	11.0		25.0	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	259.8	0.2		3.3	0.1		21.2	0.3		4.3	0.9	
Delay (s)	288.6	25.7		28.5	21.4		49.7	11.3		29.3	10.0	
Level of Service	F	C		C	C		D	B		C	B	
Approach Delay (s)		113.3			24.4			11.8			11.5	
Approach LOS		F			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	57.9	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			

HCM Unsignalized Intersection Capacity Analysis
16: Natoma St & Briggs Ranch Dr.

3/1/2010

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	732	109	0	1410	0	219
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	861	128	0	1659	0	258
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			989		1691	861
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			989		1691	861
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	14
cM capacity (veh/h)			694		84	299

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	861	128	829	829	258
Volume Left	0	0	0	0	0
Volume Right	0	128	0	0	258
cSH	1700	1700	1700	1700	299
Volume to Capacity	0.51	0.08	0.49	0.49	0.86
Queue Length 95th (ft)	0	0	0	0	190
Control Delay (s)	0.0	0.0	0.0	0.0	61.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		61.2
Approach LOS					F

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	896	306	1104	852	372	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2724	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2724	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	953	326	1174	906	396	616
RTOR Reduction (vph)	0	207	0	554	0	7
Lane Group Flow (vph)	953	119	1174	352	396	609
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	21.0	21.0	25.5	25.5	9.0	38.5
Effective Green, g (s)	21.5	21.0	27.0	27.0	9.0	40.0
Actuated g/C Ratio	0.31	0.30	0.39	0.39	0.13	0.58
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1062	472	1334	1058	445	911
v/s Ratio Prot	c0.28		c0.34		c0.12	0.38
v/s Ratio Perm		0.08		0.13		
v/c Ratio	0.90	0.25	0.88	0.33	0.89	0.67
Uniform Delay, d1	22.9	18.3	19.7	14.9	29.8	10.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.8	0.1	7.1	0.2	18.6	1.9
Delay (s)	32.7	18.4	26.8	15.1	48.4	12.0
Level of Service	C	B	C	B	D	B
Approach Delay (s)	29.1		21.7		26.3	
Approach LOS	C		C		C	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	787	120	55	175	240	66	98	208	142	109	885	1115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	874	133	61	194	267	73	109	231	158	121	983	1239
RTOR Reduction (vph)	0	0	38	0	0	60	0	0	106	0	0	0
Lane Group Flow (vph)	874	133	23	194	267	13	109	231	52	121	983	1239
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	30.9	38.5	38.5	9.9	17.5	17.5	4.5	33.6	33.6	4.7	33.3	106.7
Effective Green, g (s)	31.4	40.0	40.0	10.4	19.0	19.0	5.0	35.1	35.1	5.2	35.3	106.7
Actuated g/C Ratio	0.29	0.37	0.37	0.10	0.18	0.18	0.05	0.33	0.33	0.05	0.33	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1010	1327	593	335	630	282	161	1164	917	167	1171	1583
v/s Ratio Prot	c0.25	0.04		0.06	0.08		0.03	0.07		0.04	0.28	
v/s Ratio Perm			0.01			0.01			0.02			c0.78
v/c Ratio	0.87	0.10	0.04	0.58	0.42	0.05	0.68	0.20	0.06	0.72	0.84	0.78
Uniform Delay, d1	35.6	21.7	21.2	46.1	39.0	36.3	50.1	25.7	24.5	50.0	33.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	0.0	0.0	1.5	0.8	0.1	8.5	0.1	0.0	12.4	5.6	3.9
Delay (s)	43.3	21.7	21.2	47.6	39.8	36.5	58.6	25.8	24.5	62.4	38.7	3.9
Level of Service	D	C	C	D	D	D	E	C	C	E	D	A
Approach Delay (s)		39.3			42.2			32.6			21.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	0.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
19: Green Valley Rd & Access Rd.

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	973	76	33	2011	11	87	11	55	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	1003	78	34	2073	11	90	11	57	11	11	11
RTOR Reduction (vph)	0	0	28	0	0	0	0	0	52	0	11	0
Lane Group Flow (vph)	11	1003	50	34	2084	0	50	51	5	0	22	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.7	57.5	57.5	3.8	60.6		8.8	8.8	8.8		2.9	
Effective Green, g (s)	0.3	59.2	57.5	3.4	62.3		8.6	8.6	8.6		2.7	
Actuated g/C Ratio	0.00	0.66	0.64	0.04	0.69		0.10	0.10	0.10		0.03	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	6	2330	1012	67	2450		161	163	151		53	
v/s Ratio Prot	0.01	0.28		c0.02	c0.59		0.03	c0.03			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	1.83	0.43	0.05	0.51	0.85		0.31	0.31	0.04		0.42	
Uniform Delay, d1	44.8	7.3	6.0	42.4	10.3		37.9	37.9	36.9		42.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	719.2	0.1	0.0	3.1	3.1		1.1	1.1	0.1		5.5	
Delay (s)	764.0	7.5	6.1	45.5	13.4		39.0	39.0	37.0		48.4	
Level of Service	F	A	A	D	B		D	D	D		D	
Approach Delay (s)		15.0			13.9			38.3			48.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2010 NO-BUILD PM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	426	437	994	131	339	87	874	546	109	175	481	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	473	486	1104	146	377	97	971	607	121	194	534	340
RTOR Reduction (vph)	0	0	369	0	0	78	0	0	88	0	0	271
Lane Group Flow (vph)	473	486	735	146	377	19	515	1063	33	194	534	69
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	39.0	55.0	55.0	10.0	26.8	26.8	38.7	38.7	38.7	21.8	21.8	21.8
Effective Green, g (s)	38.0	56.7	56.7	9.0	27.7	27.7	40.0	40.0	40.0	23.1	23.1	23.1
Actuated g/C Ratio	0.26	0.39	0.39	0.06	0.19	0.19	0.28	0.28	0.28	0.16	0.16	0.16
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	465	1386	610	110	677	297	445	917	428	282	565	249
v/s Ratio Prot	0.27	0.14		c0.08	0.11		0.32	c0.32		0.11	c0.15	
v/s Ratio Perm			c0.47			0.01			0.02			0.04
v/c Ratio	1.02	0.35	1.20	1.33	0.56	0.06	1.16	1.16	0.08	0.69	0.95	0.28
Uniform Delay, d1	53.4	31.1	44.0	67.9	53.0	47.9	52.4	52.4	38.8	57.4	60.2	53.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.1	0.1	106.9	196.9	0.6	0.0	93.4	83.9	0.0	5.5	24.5	0.2
Delay (s)	99.5	31.1	151.0	264.8	53.6	48.0	145.8	136.3	38.8	62.9	84.8	53.7
Level of Service	F	C	F	F	D	D	F	F	D	E	F	D
Approach Delay (s)		111.0			102.4			132.2			70.9	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	108.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	144.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	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)	109	0	219	0	0	0	142	1475	0	0	1322	109
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1546				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1546				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	121	0	243	0	0	0	158	1639	0	0	1469	121
RTOR Reduction (vph)	0	0	127	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	121	116	0	0	0	158	1639	0	0	1469	104
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		16.4	16.4				11.0	121.6			106.6	106.6
Effective Green, g (s)		16.4	16.4				11.0	123.1			108.1	108.1
Actuated g/C Ratio		0.11	0.11				0.07	0.83			0.73	0.73
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		157	172				132	1555			1365	1137
v/s Ratio Prot							0.09	c0.88			0.79	
v/s Ratio Perm		c0.09	0.07									0.07
v/c Ratio		0.77	0.67				1.20	1.05			1.08	0.09
Uniform Delay, d1		63.7	63.0				68.2	12.2			19.7	5.6
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		20.5	10.0				140.8	38.6			47.7	0.0
Delay (s)		84.2	72.9				209.1	50.8			67.4	5.7
Level of Service		F	E				F	D			E	A
Approach Delay (s)		76.7			0.0			64.7			62.7	
Approach LOS		E			A			E			E	

Intersection Summary			
HCM Average Control Delay	65.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	147.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Oak Hill Dr & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	11	382	22	11	22	481	1508	11	11	1377	22
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1803	1535		1713		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1803	1535		1713		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	23	12	406	23	12	23	512	1604	12	12	1465	23
RTOR Reduction (vph)	0	0	383	0	16	0	0	0	2	0	0	6
Lane Group Flow (vph)	0	35	23	0	42	0	512	1604	10	12	1465	17
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		7.8	7.8		5.8		42.8	95.0	95.0	4.5	56.7	56.7
Effective Green, g (s)		7.2	7.2		5.2		41.8	96.7	95.0	3.5	58.4	58.4
Actuated g/C Ratio		0.06	0.06		0.04		0.33	0.75	0.74	0.03	0.45	0.45
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		101	86		69		575	2661	1144	48	1607	719
v/s Ratio Prot		c0.02			c0.02		c0.29	0.45		0.01	c0.41	
v/s Ratio Perm			0.01						0.01			0.01
v/c Ratio		0.35	0.26		0.60		0.89	0.60	0.01	0.25	0.91	0.02
Uniform Delay, d1		58.4	58.2		60.7		41.2	7.2	4.4	61.3	32.7	19.4
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.6		9.8		15.5	0.3	0.0	1.0	8.1	0.0
Delay (s)		59.2	58.8		70.5		56.7	7.5	4.4	62.3	40.7	19.4
Level of Service		E	E		E		E	A	A	E	D	B
Approach Delay (s)		58.8			70.5			19.3			40.6	
Approach LOS		E			E			B			D	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	120	0	0	0	66	1912	0	0	1694	66
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6372	
Flt Permitted			1.00				0.07	1.00			1.00	
Satd. Flow (perm)			2787				135	3539			6372	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	141	0	0	0	78	2249	0	0	1993	78
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	98	0	0	0	78	2249	0	0	2067	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			8.5				73.5	73.5			73.5	
Effective Green, g (s)			8.5				73.5	73.5			73.5	
Actuated g/C Ratio			0.09				0.82	0.82			0.82	
Clearance Time (s)			4.0				4.0	4.0			4.0	
Vehicle Extension (s)			3.0				3.0	3.0			3.0	
Lane Grp Cap (vph)			263				110	2890			5204	
v/s Ratio Prot								c0.64			0.32	
v/s Ratio Perm			c0.04				0.58					
v/c Ratio			0.37				0.71	0.78			0.40	
Uniform Delay, d1			38.2				3.6	4.1			2.2	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				32.0	2.1			0.2	
Delay (s)			39.1				35.6	6.3			2.5	
Level of Service			D				D	A			A	
Approach Delay (s)		39.1			0.0			7.3			2.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	22	44	404	22	973	33	951	251	1049	667	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.90		1.00	0.88	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1675		1610	2788	1441	1770	3539	1583	3433	3506	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1675		1610	2788	1441	1770	3539	1583	3433	3506	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	24	49	449	24	1081	37	1057	279	1166	741	49
RTOR Reduction (vph)	0	45	0	0	444	443	0	0	204	0	2	0
Lane Group Flow (vph)	61	28	0	359	211	97	37	1057	75	1166	788	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	10.9	10.9		27.0	27.0	27.0	5.5	40.5	40.5	54.1	89.1	
Effective Green, g (s)	10.9	10.9		27.0	27.0	27.0	5.5	42.0	40.5	54.1	90.6	
Actuated g/C Ratio	0.07	0.07		0.18	0.18	0.18	0.04	0.28	0.27	0.36	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	129	122		290	502	259	65	991	427	1238	2118	
v/s Ratio Prot	c0.03	0.02		c0.22	0.08		0.02	c0.30		c0.34	0.22	
v/s Ratio Perm						0.07			0.05			
v/c Ratio	0.47	0.23		1.24	0.42	0.38	0.57	1.07	0.18	0.94	0.37	
Uniform Delay, d1	66.8	65.6		61.5	54.6	54.1	71.1	54.0	42.0	46.4	15.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.3		133.1	0.2	0.3	6.7	48.1	0.9	13.8	0.5	
Delay (s)	67.8	65.9		194.6	54.8	54.4	77.7	102.1	42.9	60.2	15.7	
Level of Service	E	E		F	D	D	E	F	D	E	B	
Approach Delay (s)		66.8			86.9			89.4			42.2	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	11	612	33	22	11	830	1093	44	11	776	273
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648			1771		1770	3516		1770	3381	
Flt Permitted		0.99			0.52		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648			947		1770	3516		1770	3381	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	12	644	35	23	12	874	1151	46	12	817	287
RTOR Reduction (vph)	0	113	0	0	6	0	0	2	0	0	29	0
Lane Group Flow (vph)	0	704	0	0	64	0	874	1195	0	12	1075	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		37.3			37.3		39.3	67.8		1.1	29.6	
Effective Green, g (s)		39.0			39.0		40.0	70.0		1.8	31.8	
Actuated g/C Ratio		0.32			0.32		0.33	0.57		0.01	0.26	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		523			301		577	2004		26	876	
v/s Ratio Prot		c0.43					c0.49	0.34		0.01	c0.32	
v/s Ratio Perm					0.07							
v/c Ratio		1.35			0.21		1.51	0.60		0.46	1.23	
Uniform Delay, d1		41.9			30.7		41.4	17.2		60.0	45.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		168.5			0.4		240.5	0.5		4.7	112.4	
Delay (s)		210.4			31.0		281.9	17.7		64.7	157.9	
Level of Service		F			C		F	B		E	F	
Approach Delay (s)		210.4			31.0			129.2			156.9	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	151.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	122.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	134.8%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	361	699	601	11	962	820	1049	1093	11	514	667	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	401	777	668	12	1069	911	1166	1214	12	571	741	364
RTOR Reduction (vph)	0	0	292	0	0	261	0	0	7	0	0	139
Lane Group Flow (vph)	401	777	376	12	1069	650	1166	1214	5	571	741	225
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.5	60.7	60.7	1.0	43.2	43.2	27.5	37.8	37.8	26.5	36.8	36.8
Effective Green, g (s)	19.0	61.2	61.2	1.5	43.7	43.7	28.0	39.3	39.3	27.0	38.3	38.3
Actuated g/C Ratio	0.13	0.42	0.42	0.01	0.30	0.30	0.19	0.27	0.27	0.19	0.26	0.26
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	232	1494	668	18	1067	477	663	959	429	330	935	418
v/s Ratio Prot	c0.23	0.22		0.01	0.30		c0.34	c0.34		c0.32	0.21	
v/s Ratio Perm			0.24			c0.41			0.00			0.14
v/c Ratio	1.73	0.52	0.56	0.67	1.00	1.36	1.76	1.27	0.01	1.73	0.79	0.54
Uniform Delay, d1	63.0	31.0	31.7	71.5	50.6	50.6	58.5	52.8	38.7	59.0	49.7	45.8
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	345.3	0.2	0.6	54.1	28.0	176.7	347.6	128.0	0.1	341.1	6.9	4.9
Delay (s)	408.3	31.2	32.4	125.6	78.7	227.4	406.1	180.9	38.7	400.1	56.5	50.7
Level of Service	F	C	C	F	E	F	F	F	D	F	E	D
Approach Delay (s)		113.5			146.9			289.9			172.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	187.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Forrest St & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	22	11	164	22	459	22	1683	208	470	820	22
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	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1530	1681	1704	1561	1770	5001		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1530	1681	1704	1561	1770	5001		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	24	12	182	24	510	24	1870	231	522	911	24
RTOR Reduction (vph)	0	0	12	0	0	393	0	10	0	0	0	7
Lane Group Flow (vph)	0	36	0	102	104	117	24	2091	0	522	911	17
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.6	2.6	16.8	16.8	16.8	4.0	59.6		51.0	106.6	106.6
Effective Green, g (s)		3.1	3.1	17.3	17.3	17.3	4.5	62.1		51.5	109.1	109.1
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.03	0.41		0.34	0.73	0.73
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		38	32	194	197	180	53	2070		608	2574	1127
v/s Ratio Prot		c0.02		0.06	0.06		0.01	c0.42		c0.29	0.26	
v/s Ratio Perm			0.00			c0.08						0.01
v/c Ratio		0.95	0.01	0.53	0.53	0.65	0.45	1.01		0.86	0.35	0.02
Uniform Delay, d1		73.4	71.9	62.5	62.5	63.5	71.5	43.9		45.9	7.5	5.6
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		122.9	0.0	1.2	1.2	6.3	2.2	22.3		11.2	0.4	0.0
Delay (s)		196.3	72.0	63.7	63.7	69.7	73.8	66.2		57.0	7.9	5.7
Level of Service		F	E	E	E	E	E	E		E	A	A
Approach Delay (s)		165.2			68.0			66.3			25.5	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM Average Control Delay	54.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	22	22	1770	22	11	1213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3533		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3533		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	24	1967	24	12	1348
RTOR Reduction (vph)	22	0	0	0	0	0
Lane Group Flow (vph)	26	0	1991	0	12	1348
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.6		77.8		3.6	85.4
Effective Green, g (s)	6.6		77.8		3.6	85.4
Actuated g/C Ratio	0.07		0.78		0.04	0.85
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	112		2749		64	1591
v/s Ratio Prot	c0.02		0.56		0.01	c0.72
v/s Ratio Perm						
v/c Ratio	0.23		0.72		0.19	0.85
Uniform Delay, d1	44.3		5.6		46.8	3.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.7		0.9	5.8
Delay (s)	45.3		7.3		47.7	9.6
Level of Service	D		A		D	A
Approach Delay (s)	45.3		7.3			10.0
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	208	22	0	1584	1158	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3408			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3408			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	231	24	0	1760	1287	84
RTOR Reduction (vph)	10	0	0	0	0	19
Lane Group Flow (vph)	245	0	0	1760	1287	65
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	12.0			70.0	70.0	70.0
Effective Green, g (s)	12.0			70.0	70.0	70.0
Actuated g/C Ratio	0.13			0.78	0.78	0.78
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	454			2753	1449	1231
v/s Ratio Prot	c0.07			0.50	c0.69	
v/s Ratio Perm						0.04
v/c Ratio	0.54			0.64	0.89	0.05
Uniform Delay, d1	36.4			4.4	7.2	2.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.2			1.2	8.4	0.1
Delay (s)	37.6			5.6	15.6	2.4
Level of Service	D			A	B	A
Approach Delay (s)	37.6			5.6	14.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1136	33	11	1508	22	33	109	55	44	44	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1475		3093			1765			1742	
Flt Permitted		0.98	1.00		0.90			0.91			0.64	
Satd. Flow (perm)		1771	1475		2781			1613			1132	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	1262	37	12	1676	24	37	121	61	49	49	49
RTOR Reduction (vph)	0	0	9	0	1	0	0	15	0	0	19	0
Lane Group Flow (vph)	0	1274	28	0	1711	0	0	204	0	0	128	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		76.0	76.0		76.0			16.0			16.0	
Effective Green, g (s)		76.0	76.0		76.0			16.0			16.0	
Actuated g/C Ratio		0.76	0.76		0.76			0.16			0.16	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1346	1121		2114			258			181	
v/s Ratio Prot												
v/s Ratio Perm		c0.72	0.02		0.62			c0.13			0.11	
v/c Ratio		0.95	0.03		0.81			0.79			0.71	
Uniform Delay, d1		10.3	2.9		7.5			40.4			39.8	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		14.7	0.0		3.5			14.2			9.8	
Delay (s)		25.0	3.0		11.0			54.6			49.5	
Level of Service		C	A		B			D			D	
Approach Delay (s)		24.3			11.0			54.6			49.5	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.8%	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)	546	667	22	44	787	11	22	481	120	109	372	732
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	607	741	24	49	874	12	24	534	133	121	413	813
RTOR Reduction (vph)	0	1	0	0	1	0	0	6	0	0	0	28
Lane Group Flow (vph)	607	764	0	49	885	0	24	661	0	121	413	785
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	31.0	82.2		5.6	56.8		2.4	41.8		6.0	45.4	76.4
Effective Green, g (s)	31.0	82.2		5.6	56.8		2.4	41.8		6.0	45.4	76.4
Actuated g/C Ratio	0.20	0.54		0.04	0.37		0.02	0.28		0.04	0.30	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	362	1005		65	585		28	498		70	558	840
v/s Ratio Prot	c0.34	0.41		0.03	c0.57		0.01	c0.37		c0.07	0.22	c0.19
v/s Ratio Perm												0.30
v/c Ratio	1.68	0.76		0.75	1.51		0.86	1.33		1.73	0.74	0.93
Uniform Delay, d1	60.3	27.0		72.3	47.4		74.4	54.9		72.8	47.8	35.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	316.4	3.7		34.8	239.8		106.2	160.9		380.4	5.6	17.0
Delay (s)	376.7	30.7		107.2	287.2		180.6	215.8		453.2	53.4	52.3
Level of Service	F	C		F	F		F	F		F	D	D
Approach Delay (s)		183.8			277.8			214.6			88.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	179.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.53		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	350	525	448	251	186	372
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1566	1770	1544
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1566	1770	1544
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	583	498	279	207	413
RTOR Reduction (vph)	0	0	0	46	0	323
Lane Group Flow (vph)	389	583	498	233	207	90
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	12.4	26.3	9.9	19.4	9.5	9.5
Effective Green, g (s)	12.4	26.3	9.9	19.4	9.5	9.5
Actuated g/C Ratio	0.28	0.60	0.23	0.44	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	501	1119	800	837	384	335
v/s Ratio Prot	c0.22	c0.31	0.14	0.06	c0.12	
v/s Ratio Perm				0.09		0.06
v/c Ratio	0.78	0.52	0.62	0.28	0.54	0.27
Uniform Delay, d1	14.4	5.1	15.3	7.8	15.2	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.5	0.5	1.1	0.1	0.7	0.2
Delay (s)	21.9	5.5	16.4	7.8	15.9	14.4
Level of Service	C	A	B	A	B	B
Approach Delay (s)		12.1	13.3		14.9	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	55	11	262	109	142	11	994	33	66	940	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1816		1770	1704		1770	1854		1770	1844	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1816		1770	1704		1770	1854		1770	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	35	59	12	282	117	153	12	1069	35	71	1011	71
RTOR Reduction (vph)	0	5	0	0	33	0	0	1	0	0	1	0
Lane Group Flow (vph)	35	66	0	282	237	0	12	1103	0	71	1081	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.2	8.9		24.3	29.0		0.9	88.5		7.0	94.6	
Effective Green, g (s)	4.0	8.7		24.1	28.8		0.7	88.3		6.8	94.4	
Actuated g/C Ratio	0.03	0.06		0.17	0.20		0.00	0.61		0.05	0.66	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	49	110		296	341		9	1138		84	1210	
v/s Ratio Prot	0.02	0.04		c0.16	c0.14		0.01	c0.60		c0.04	0.59	
v/s Ratio Perm												
v/c Ratio	0.71	0.60		0.95	0.70		1.33	0.97		0.85	0.89	
Uniform Delay, d1	69.4	65.9		59.3	53.5		71.6	26.5		68.0	20.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	33.5	6.2		39.2	4.9		429.4	19.5		48.9	8.7	
Delay (s)	102.9	72.2		98.6	58.4		501.0	46.0		117.0	29.3	
Level of Service	F	E		F	E		F	D		F	C	
Approach Delay (s)		82.3			78.9			50.9			34.7	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	33	11	197	11	197	11	1060	66	98	841	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784		1770	1557		1770	3503		1770	3531	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1784		1770	1557		1770	3503		1770	3531	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	24	36	12	216	12	216	12	1165	73	108	924	12
RTOR Reduction (vph)	0	11	0	0	130	0	0	4	0	0	1	0
Lane Group Flow (vph)	24	37	0	216	98	0	12	1234	0	108	935	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.7	6.4		11.8	16.5		0.5	33.5		6.3	39.3	
Effective Green, g (s)	1.7	6.4		11.8	16.5		0.5	34.5		6.3	40.3	
Actuated g/C Ratio	0.02	0.09		0.16	0.22		0.01	0.46		0.08	0.54	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	40	152		278	343		12	1611		149	1897	
v/s Ratio Prot	0.01	0.02		c0.12	c0.06		0.01	c0.35		c0.06	0.26	
v/s Ratio Perm												
v/c Ratio	0.60	0.24		0.78	0.28		1.00	0.77		0.72	0.49	
Uniform Delay, d1	36.3	32.0		30.3	24.3		37.2	16.9		33.5	10.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.1	0.3		11.7	0.2		259.8	2.2		13.7	0.2	
Delay (s)	52.4	32.3		42.1	24.5		297.1	19.1		47.3	11.1	
Level of Service	D	C		D	C		F	B		D	B	
Approach Delay (s)		39.0			33.0			21.8			14.9	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
16: Natoma St & Briggs Ranch Dr.

3/1/2010

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1147	109	0	1126	0	393
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1349	128	0	1325	0	462
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1478		2012	1349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1478		2012	1349
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			452		51	141

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1349	128	662	662	462
Volume Left	0	0	0	0	0
Volume Right	0	128	0	0	462
cSH	1700	1700	1700	1700	141
Volume to Capacity	0.79	0.08	0.39	0.39	3.29
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	1416.1		
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1005	317	809	809	590	951
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2723	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2723	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1069	337	861	861	628	1012
RTOR Reduction (vph)	0	238	0	565	0	3
Lane Group Flow (vph)	1069	99	861	296	628	1009
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.5	23.5	26.0	26.0	16.5	46.5
Effective Green, g (s)	24.0	23.5	27.5	27.5	16.5	48.0
Actuated g/C Ratio	0.30	0.29	0.34	0.34	0.21	0.60
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1030	459	1180	936	708	950
v/s Ratio Prot	c0.31		0.25		0.18	c0.64
v/s Ratio Perm		0.06		0.11		
v/c Ratio	1.04	0.22	0.73	0.32	0.89	1.06
Uniform Delay, d1	28.0	21.3	23.0	19.3	30.8	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.3	0.1	2.3	0.2	12.5	47.1
Delay (s)	66.3	21.4	25.3	19.5	43.4	63.1
Level of Service	E	C	C	B	D	E
Approach Delay (s)	55.6		22.4		55.5	
Approach LOS	E		C		E	

Intersection Summary			
HCM Average Control Delay	43.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	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)	1093	197	66	175	153	131	87	907	142	109	415	863
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1214	219	73	194	170	146	97	1008	158	121	461	959
RTOR Reduction (vph)	0	0	42	0	0	63	0	0	77	0	0	0
Lane Group Flow (vph)	1214	219	31	194	170	83	97	1008	81	121	461	959
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	46.8	52.3	52.3	11.0	16.5	16.5	7.2	37.5	37.5	5.1	34.9	125.9
Effective Green, g (s)	47.3	53.8	53.8	11.5	18.0	18.0	7.7	39.0	39.0	5.6	36.9	125.9
Actuated g/C Ratio	0.38	0.43	0.43	0.09	0.14	0.14	0.06	0.31	0.31	0.04	0.29	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1290	1512	676	314	506	226	210	1096	863	153	1037	1583
v/s Ratio Prot	c0.35	0.06		0.06	0.05		0.03	c0.28		0.04	0.13	
v/s Ratio Perm			0.02			0.05			0.03			c0.61
v/c Ratio	0.94	0.14	0.05	0.62	0.34	0.37	0.46	0.92	0.09	0.79	0.44	0.61
Uniform Delay, d1	38.0	22.0	21.1	55.1	48.6	48.8	57.1	41.9	30.9	59.6	36.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.3	0.1	0.0	2.5	0.7	1.7	0.6	12.5	0.1	22.3	0.4	1.7
Delay (s)	51.2	22.1	21.1	57.6	49.3	50.5	57.7	54.4	31.0	81.9	36.6	1.7
Level of Service	D	C	C	E	D	D	E	D	C	F	D	A
Approach Delay (s)		45.5			52.8			51.7			18.4	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	2054	66	76	1322	11	55	11	76	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	2118	68	78	1363	11	57	11	78	11	11	11
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	72	0	11	0
Lane Group Flow (vph)	11	2118	55	78	1374	0	34	34	6	0	22	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.6	75.5	75.5	7.1	82.0		8.5	8.5	8.5		2.6	
Effective Green, g (s)	0.2	77.2	75.5	6.7	83.7		8.3	8.3	8.3		2.4	
Actuated g/C Ratio	0.00	0.70	0.68	0.06	0.76		0.08	0.08	0.08		0.02	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	3	2470	1081	107	2675		126	128	119		38	
v/s Ratio Prot	0.01	c0.60		c0.04	0.39		c0.02	0.02			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	3.67	0.86	0.05	0.73	0.51		0.27	0.27	0.05		0.59	
Uniform Delay, d1	55.2	12.6	5.8	51.1	5.4		48.3	48.3	47.5		53.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	1761.9	3.2	0.0	19.5	0.2		1.2	1.2	0.2		21.2	
Delay (s)	1817.1	15.8	5.8	70.6	5.5		49.5	49.4	47.7		74.8	
Level of Service	F	B	A	E	A		D	D	D		E	
Approach Delay (s)		24.5			9.0			48.5			74.8	
Approach LOS		C			A			D			E	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2016 NO-BUILD AM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	197	726	135	443	123	1329	382	50	98	664	517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1554	1770	3539	1554	1610	3286	1548	1770	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1554	1770	3539	1554	1610	3286	1548	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	219	219	807	150	492	137	1477	424	56	109	738	574
RTOR Reduction (vph)	0	0	490	0	0	112	0	0	35	0	0	120
Lane Group Flow (vph)	219	219	317	150	492	25	738	1163	21	109	738	454
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	15.0	28.4	28.4	11.0	25.2	25.2	53.7	53.7	53.7	31.7	31.7	31.7
Effective Green, g (s)	14.0	30.1	30.1	10.0	26.1	26.1	55.0	55.0	55.0	33.0	33.0	33.0
Actuated g/C Ratio	0.10	0.21	0.21	0.07	0.18	0.18	0.38	0.38	0.38	0.23	0.23	0.23
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	172	739	325	123	641	281	615	1254	591	405	810	358
v/s Ratio Prot	c0.12	0.06		0.08	0.14		c0.46	0.35		0.06	0.21	
v/s Ratio Perm			c0.20			0.02			0.01			c0.29
v/c Ratio	1.27	0.30	0.98	1.22	0.77	0.09	1.20	1.15dl	0.04	0.27	0.91	1.27
Uniform Delay, d1	65.0	48.1	56.6	67.0	56.1	49.1	44.6	42.6	27.9	45.6	54.1	55.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	160.4	0.1	42.9	151.7	5.0	0.0	105.0	11.6	0.0	0.1	14.1	141.6
Delay (s)	225.4	48.2	99.6	218.8	61.1	49.1	149.6	54.2	27.9	45.8	68.2	197.1
Level of Service	F	D	F	F	E	D	F	D	C	D	E	F
Approach Delay (s)		112.7			89.3			89.4			118.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	102.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	144.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	0	148	0	0	0	185	1514	0	0	1476	148
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	219	0	164	0	0	0	206	1682	0	0	1640	164
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	22
Lane Group Flow (vph)	0	219	36	0	0	0	206	1682	0	0	1640	142
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		19.0	19.0				14.0	121.5			103.5	103.5
Effective Green, g (s)		19.0	19.0				14.0	123.0			105.0	105.0
Actuated g/C Ratio		0.13	0.13				0.09	0.82			0.70	0.70
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		179	196				165	1528			1304	1086
v/s Ratio Prot							c0.12	0.90			c0.88	
v/s Ratio Perm		c0.16	0.02									0.09
v/c Ratio		1.22	0.18				1.25	1.10			1.26	0.13
Uniform Delay, d1		65.5	58.6				68.0	13.5			22.5	7.4
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		140.1	0.4				152.1	55.8			122.3	0.0
Delay (s)		205.6	59.0				220.1	69.3			144.8	7.5
Level of Service		F	E				F	E			F	A
Approach Delay (s)		142.8			0.0			85.8			132.3	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	111.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.8%	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)	25	12	529	12	12	12	430	1612	12	12	1576	37
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1802	1545		1735		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1802	1545		1735		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	13	563	13	13	13	457	1715	13	13	1677	39
RTOR Reduction (vph)	0	0	374	0	13	0	0	0	3	0	0	9
Lane Group Flow (vph)	0	40	189	0	26	0	457	1715	10	13	1677	30
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		19.4	19.4		5.5		36.1	97.0	97.0	4.6	65.5	65.5
Effective Green, g (s)		18.8	18.8		4.9		35.1	98.7	97.0	3.6	67.2	67.2
Actuated g/C Ratio		0.13	0.13		0.03		0.25	0.70	0.68	0.03	0.47	0.47
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		239	205		60		438	2460	1058	45	1675	749
v/s Ratio Prot		0.02			c0.02		c0.26	0.48		0.01	c0.47	
v/s Ratio Perm			c0.12						0.01			0.02
v/c Ratio		0.17	0.92		0.44		1.04	0.70	0.01	0.29	1.00	0.04
Uniform Delay, d1		54.7	60.9		67.2		53.4	12.8	7.2	67.9	37.4	20.1
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.1	41.0		1.9		54.8	0.7	0.0	1.3	22.3	0.0
Delay (s)		54.8	101.9		69.1		108.2	13.5	7.2	69.2	59.7	20.1
Level of Service		D	F		E		F	B	A	E	E	C
Approach Delay (s)		98.8			69.1			33.3			58.9	
Approach LOS		F			E			C			E	

Intersection Summary			
HCM Average Control Delay	52.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	123	0	0	0	25	2018	0	0	2018	74
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6374	
Flt Permitted			1.00				0.06	1.00			1.00	
Satd. Flow (perm)			2787				118	3539			6374	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	145	0	0	0	29	2374	0	0	2374	87
RTOR Reduction (vph)	0	0	16	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	129	0	0	0	29	2374	0	0	2457	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			9.0				63.0	63.0			63.0	
Effective Green, g (s)			9.0				63.0	63.0			63.0	
Actuated g/C Ratio			0.11				0.79	0.79			0.79	
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)			314				93	2787			5020	
v/s Ratio Prot								c0.67			0.39	
v/s Ratio Perm			c0.05				0.25					
v/c Ratio			0.41				0.31	0.85			0.49	
Uniform Delay, d1			33.0				2.4	5.5			2.9	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				8.5	3.5			0.3	
Delay (s)			33.9				10.9	9.0			3.3	
Level of Service			C				B	A			A	
Approach Delay (s)		33.9			0.0			9.0			3.3	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	25	37	197	25	1157	25	849	357	972	1083	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.91		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1697		1610	2754	1441	1770	3539	1583	3433	3527	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1697		1610	2754	1441	1770	3539	1583	3433	3527	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	28	41	219	28	1286	28	943	397	1080	1203	28
RTOR Reduction (vph)	0	38	0	0	559	559	0	0	295	0	1	0
Lane Group Flow (vph)	41	31	0	197	134	84	28	943	102	1080	1230	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	8.4	8.4		11.0	11.0	11.0	3.3	28.2	28.2	44.9	69.8	
Effective Green, g (s)	8.4	8.4		11.0	11.0	11.0	3.3	29.7	28.2	44.9	71.3	
Actuated g/C Ratio	0.08	0.08		0.10	0.10	0.10	0.03	0.27	0.26	0.41	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	135	130		161	275	144	53	956	406	1401	2286	
v/s Ratio Prot	c0.02	0.02		c0.12	0.05		0.02	c0.27		c0.31	0.35	
v/s Ratio Perm						0.06			0.06			
v/c Ratio	0.30	0.24		1.22	0.91dr	0.58	0.53	0.99	0.25	0.77	0.54	
Uniform Delay, d1	48.0	47.8		49.5	46.8	47.3	52.6	39.9	32.5	28.1	10.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3		143.5	0.5	3.9	4.3	26.0	1.5	2.4	0.9	
Delay (s)	48.5	48.1		193.0	47.3	51.2	56.9	66.0	34.0	30.6	11.4	
Level of Service	D	D		F	D	D	E	E	C	C	B	
Approach Delay (s)		48.3			67.7			56.5			20.3	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	12	972	50	12	12	234	1034	12	12	1206	135
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1644			1759		1770	3532		1770	3478	
Flt Permitted		0.99			0.40		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1644			727		1770	3532		1770	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	220	13	1023	53	13	13	246	1088	13	13	1269	142
RTOR Reduction (vph)	0	99	0	0	5	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	1157	0	0	74	0	246	1100	0	13	1406	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		74.3			74.3		14.3	60.8		1.1	47.6	
Effective Green, g (s)		76.0			76.0		15.0	63.0		1.8	49.8	
Actuated g/C Ratio		0.50			0.50		0.10	0.41		0.01	0.33	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		818			362		174	1456		21	1134	
v/s Ratio Prot		c0.70					c0.14	0.31		0.01	c0.40	
v/s Ratio Perm					0.10							
v/c Ratio		1.42			0.20		1.41	0.76		0.62	1.24	
Uniform Delay, d1		38.4			21.5		68.9	38.3		75.2	51.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		194.0			0.3		216.6	2.4		32.5	115.4	
Delay (s)		232.4			21.8		285.5	40.7		107.7	166.9	
Level of Service		F			C		F	D		F	F	
Approach Delay (s)		232.4			21.8			85.4			166.4	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	157.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	152.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	947	1021	25	911	579	369	394	12	357	1858	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	287	1052	1134	28	1012	643	410	438	13	397	2064	219
RTOR Reduction (vph)	0	0	101	0	0	339	0	0	9	0	0	55
Lane Group Flow (vph)	287	1052	1033	28	1012	304	410	438	4	397	2064	164
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	21.3	57.5	57.5	2.0	38.2	38.2	9.5	37.8	37.8	28.7	57.0	57.0
Effective Green, g (s)	21.8	58.0	58.0	2.5	38.7	38.7	10.0	39.3	39.3	29.2	58.5	58.5
Actuated g/C Ratio	0.15	0.40	0.40	0.02	0.27	0.27	0.07	0.27	0.27	0.20	0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	266	1416	633	31	945	422	237	959	429	356	1428	639
v/s Ratio Prot	c0.16	0.30		0.02	0.29		c0.12	0.12		0.22	c0.58	
v/s Ratio Perm			c0.65			0.19			0.00			0.10
v/c Ratio	1.08	0.74	1.63	0.90	1.07	0.72	1.73	0.46	0.01	1.12	1.45	0.26
Uniform Delay, d1	61.6	37.1	43.5	71.1	53.2	48.3	67.5	44.0	38.6	57.9	43.2	28.8
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	77.8	1.9	291.2	119.0	50.2	5.1	345.6	1.6	0.0	82.6	204.4	1.0
Delay (s)	139.4	39.0	334.7	190.2	103.3	53.3	413.1	45.5	38.6	140.5	247.7	29.8
Level of Service	F	D	F	F	F	D	F	D	D	F	F	C
Approach Delay (s)		186.3			85.7			220.5			214.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	177.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	127.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	25	25	247	0	197	12	566	247	135	2782	12
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	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1834	1529	1681	1681	1561	1770	4854		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1834	1529	1681	1681	1561	1770	4854		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	28	28	274	0	219	13	629	274	150	3091	13
RTOR Reduction (vph)	0	0	27	0	0	126	0	41	0	0	0	2
Lane Group Flow (vph)	0	41	1	137	137	93	13	862	0	150	3091	11
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	18.0	18.0	18.0	1.7	93.3		16.2	107.8	107.8
Effective Green, g (s)		3.0	3.0	18.5	18.5	18.5	2.2	95.8		16.7	110.3	110.3
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.01	0.64		0.11	0.74	0.74
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	207	207	193	26	3100		197	2602	1140
v/s Ratio Prot		c0.02		c0.08	0.08		0.01	0.18		c0.08	c0.87	
v/s Ratio Perm			0.00			0.06						0.01
v/c Ratio		1.11	0.02	0.66	0.66	0.48	0.50	0.28		0.76	1.19	0.01
Uniform Delay, d1		73.5	72.1	62.8	62.8	61.3	73.4	11.9		64.7	19.9	5.3
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		182.0	0.1	6.0	6.0	0.7	5.4	0.2		14.4	88.7	0.0
Delay (s)		255.5	72.1	68.8	68.8	62.0	78.8	12.1		79.1	108.6	5.3
Level of Service		F	E	E	E	E	E	B		E	F	A
Approach Delay (s)		181.1			65.8			13.1			106.8	
Approach LOS		F			E			B			F	

Intersection Summary			
HCM Average Control Delay	85.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	12	12	1501	12	12	1304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3535		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3535		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	13	1668	13	13	1449
RTOR Reduction (vph)	12	0	0	0	0	0
Lane Group Flow (vph)	14	0	1681	0	13	1449
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.3		84.5		7.2	95.7
Effective Green, g (s)	6.3		84.5		7.2	95.7
Actuated g/C Ratio	0.06		0.77		0.07	0.87
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	97		2716		116	1621
v/s Ratio Prot	c0.01		0.48		0.01	c0.78
v/s Ratio Perm						
v/c Ratio	0.14		0.62		0.11	0.89
Uniform Delay, d1	49.3		5.6		48.4	4.2
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		1.1		0.3	8.0
Delay (s)	50.0		6.7		48.7	12.2
Level of Service	D		A		D	B
Approach Delay (s)	50.0		6.7			12.5
Approach LOS	D		A			B

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	37	12	0	1476	1219	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3356			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3356			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	13	0	1640	1354	109
RTOR Reduction (vph)	12	0	0	0	0	18
Lane Group Flow (vph)	42	0	0	1640	1354	91
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	7.2			74.8	74.8	74.8
Effective Green, g (s)	7.2			74.8	74.8	74.8
Actuated g/C Ratio	0.08			0.83	0.83	0.83
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	268			2941	1548	1316
v/s Ratio Prot	c0.01			0.46	c0.73	
v/s Ratio Perm						0.06
v/c Ratio	0.16			0.56	0.87	0.07
Uniform Delay, d1	38.6			2.4	4.7	1.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.8	7.2	0.1
Delay (s)	38.8			3.2	11.9	1.5
Level of Service	D			A	B	A
Approach Delay (s)	38.8			3.2	11.1	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	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)	12	1206	12	12	1452	12	12	25	12	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.95		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.97			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1471		3096			1768			1741	
Flt Permitted		0.98	1.00		0.94			0.92			0.93	
Satd. Flow (perm)		1771	1471		2911			1645			1638	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	1340	13	13	1613	13	13	28	13	13	13	13
RTOR Reduction (vph)	0	0	2	0	0	0	0	12	0	0	12	0
Lane Group Flow (vph)	0	1353	11	0	1639	0	0	42	0	0	27	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		93.5	93.5		93.5			8.5			8.5	
Effective Green, g (s)		93.5	93.5		93.5			8.5			8.5	
Actuated g/C Ratio		0.85	0.85		0.85			0.08			0.08	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1505	1250		2474			127			127	
v/s Ratio Prot												
v/s Ratio Perm		c0.76	0.01		0.56			c0.03			0.02	
v/c Ratio		0.90	0.01		0.66			0.33			0.21	
Uniform Delay, d1		5.2	1.2		2.8			48.1			47.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		8.9	0.0		1.4			0.6			0.3	
Delay (s)		14.1	1.3		4.2			48.6			47.9	
Level of Service		B	A		A			D			D	
Approach Delay (s)		14.0			4.2			48.6			47.9	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	394	824	12	25	467	25	25	455	98	62	407	984
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1859		1770	1553		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	438	916	13	28	519	28	28	506	109	69	452	1093
RTOR Reduction (vph)	0	0	0	0	1	0	0	5	0	0	0	44
Lane Group Flow (vph)	438	929	0	28	546	0	28	610	0	69	452	1049
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	36.0	74.4		2.4	40.8		2.4	44.8		4.0	46.4	82.4
Effective Green, g (s)	36.0	74.4		2.4	40.8		2.4	44.8		4.0	46.4	82.4
Actuated g/C Ratio	0.25	0.53		0.02	0.29		0.02	0.32		0.03	0.33	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	450	977		30	447		30	574		50	610	966
v/s Ratio Prot	0.25	0.50		0.02	c0.35		0.02	0.34		c0.04	0.24	c0.28
v/s Ratio Perm												0.39
v/c Ratio	0.97	0.95		0.93	1.22		0.93	1.06		1.38	0.74	1.09
Uniform Delay, d1	52.3	31.9		69.5	50.4		69.5	48.4		68.8	42.3	29.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	35.2	18.1		134.2	118.0		134.2	55.1		257.7	5.2	55.2
Delay (s)	87.5	50.0		203.7	168.4		203.7	103.5		326.5	47.5	84.8
Level of Service	F	D		F	F		F	F		F	D	F
Approach Delay (s)		62.0			170.1			107.8			84.7	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	92.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	141.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	480	492	222	172	369	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1571	1770	1545
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1571	1770	1545
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	533	547	247	191	410	328
RTOR Reduction (vph)	0	0	0	66	0	236
Lane Group Flow (vph)	533	547	247	125	410	92
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	21.5	34.1	8.6	25.0	16.4	16.4
Effective Green, g (s)	21.5	34.1	8.6	25.0	16.4	16.4
Actuated g/C Ratio	0.37	0.58	0.15	0.43	0.28	0.28
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	651	1086	520	779	496	433
v/s Ratio Prot	c0.30	c0.29	0.07	0.04	c0.23	
v/s Ratio Perm				0.03		0.06
v/c Ratio	0.82	0.50	0.48	0.16	0.83	0.21
Uniform Delay, d1	16.7	7.2	22.9	10.3	19.7	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0	0.4	0.3	0.0	10.3	0.1
Delay (s)	24.7	7.6	23.1	10.3	30.0	16.2
Level of Service	C	A	C	B	C	B
Approach Delay (s)		16.0	17.5		23.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	62	12	110	37	62	12	800	50	62	1354	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1688		1770	1846		1770	1858	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1817		1770	1688		1770	1846		1770	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	67	13	118	40	67	13	860	54	67	1456	27
RTOR Reduction (vph)	0	5	0	0	41	0	0	1	0	0	0	0
Lane Group Flow (vph)	27	75	0	118	66	0	13	913	0	67	1483	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.6	12.1		10.4	18.9		0.9	98.6		7.3	105.0	
Effective Green, g (s)	3.4	11.9		10.2	18.7		0.7	98.4		7.1	104.8	
Actuated g/C Ratio	0.02	0.08		0.07	0.13		0.00	0.69		0.05	0.73	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	42	151		126	220		9	1265		88	1356	
v/s Ratio Prot	0.02	c0.04		c0.07	0.04		0.01	0.49		c0.04	c0.80	
v/s Ratio Perm												
v/c Ratio	0.64	0.50		0.94	0.30		1.44	0.72		0.76	1.09	
Uniform Delay, d1	69.5	63.0		66.4	56.5		71.4	14.1		67.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	22.5	0.9		59.6	0.3		474.2	2.1		28.8	54.1	
Delay (s)	92.0	63.9		126.0	56.8		545.6	16.1		96.2	73.5	
Level of Service	F	E		F	E		F	B		F	E	
Approach Delay (s)		71.0			93.1			23.6			74.5	
Approach LOS		E			F			C			E	

Intersection Summary			
HCM Average Control Delay	59.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	143.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	12	12	98	12	123	12	862	37	110	1329	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1704		1770	1567		1770	3514		1770	3534	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1704		1770	1567		1770	3514		1770	3534	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	13	13	13	108	13	135	13	947	41	121	1460	13
RTOR Reduction (vph)	0	12	0	0	112	0	0	3	0	0	0	0
Lane Group Flow (vph)	13	14	0	108	36	0	13	985	0	121	1473	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.4	4.5		7.0	11.1		0.7	29.7		6.7	35.7	
Effective Green, g (s)	0.4	4.5		7.0	11.1		0.7	30.7		6.7	36.7	
Actuated g/C Ratio	0.01	0.07		0.11	0.17		0.01	0.47		0.10	0.57	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	11	118		191	268		19	1662		183	1998	
v/s Ratio Prot	0.01	0.01		c0.06	c0.02		0.01	0.28		c0.07	c0.42	
v/s Ratio Perm												
v/c Ratio	1.18	0.12		0.57	0.13		0.68	0.59		0.66	0.74	
Uniform Delay, d1	32.2	28.3		27.5	22.8		32.0	12.5		28.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	338.7	0.2		2.3	0.1		58.7	0.6		6.8	1.5	
Delay (s)	371.0	28.5		29.8	22.9		90.7	13.1		34.8	12.0	
Level of Service	F	C		C	C		F	B		C	B	
Approach Delay (s)		142.7			25.8			14.1			13.7	
Approach LOS		F			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	824	123	0	1588	0	247
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	969	145	0	1868	0	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1114		1904	969
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1114		1904	969
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			623		61	253

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	969	145	934	934	291
Volume Left	0	0	0	0	0
Volume Right	0	145	0	0	291
cSH	1700	1700	1700	1700	253
Volume to Capacity	0.57	0.09	0.55	0.55	1.15
Queue Length 95th (ft)	0	0	0	0	326
Control Delay (s)	0.0	0.0	0.0	0.0	144.5
Lane LOS					F
Approach Delay (s)	0.0		0.0		144.5
Approach LOS					F

Intersection Summary			
Average Delay	12.8		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1009	345	1243	959	419	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1562	3433	2724	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1562	3433	2724	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1073	367	1322	1020	446	694
RTOR Reduction (vph)	0	195	0	602	0	5
Lane Group Flow (vph)	1073	172	1322	418	446	689
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.6	28.6	35.4	35.4	12.0	51.4
Effective Green, g (s)	29.1	28.6	36.9	36.9	12.0	52.9
Actuated g/C Ratio	0.32	0.32	0.41	0.41	0.13	0.59
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1110	496	1408	1117	458	930
v/s Ratio Prot	c0.31		c0.39		c0.13	0.44
v/s Ratio Perm		0.11		0.15		
v/c Ratio	0.97	0.35	0.94	0.37	0.97	0.74
Uniform Delay, d1	30.0	23.5	25.5	18.5	38.8	13.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.2	0.2	12.1	0.2	34.9	3.2
Delay (s)	49.1	23.7	37.6	18.7	73.7	16.8
Level of Service	D	C	D	B	E	B
Approach Delay (s)	42.6		29.4		39.1	
Approach LOS	D		C		D	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
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)	988	135	62	197	270	74	110	234	160	123	997	1256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1098	150	69	219	300	82	122	260	178	137	1108	1396
RTOR Reduction (vph)	0	0	41	0	0	68	0	0	124	0	0	0
Lane Group Flow (vph)	1098	150	28	219	300	14	122	260	54	137	1108	1396
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	42.7	50.4	50.4	12.1	19.8	19.8	5.1	37.8	37.8	8.9	41.1	129.2
Effective Green, g (s)	43.2	51.9	51.9	12.6	21.3	21.3	5.6	39.3	39.3	9.4	43.1	129.2
Actuated g/C Ratio	0.33	0.40	0.40	0.10	0.16	0.16	0.04	0.30	0.30	0.07	0.33	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1148	1422	636	335	583	261	149	1076	848	250	1181	1583
v/s Ratio Prot	c0.32	0.04		0.06	0.08		0.04	0.07		0.04	c0.31	
v/s Ratio Perm			0.02			0.01			0.02			c0.88
v/c Ratio	0.96	0.11	0.04	0.65	0.51	0.05	0.82	0.24	0.06	0.55	0.94	0.88
Uniform Delay, d1	42.1	24.1	23.5	56.2	49.2	45.4	61.3	33.8	31.9	57.8	41.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.8	0.0	0.0	3.5	1.3	0.1	27.0	0.2	0.1	1.3	13.9	7.4
Delay (s)	58.9	24.2	23.6	59.7	50.5	45.6	88.3	34.0	32.0	59.2	55.7	7.4
Level of Service	E	C	C	E	D	D	F	C	C	E	E	A
Approach Delay (s)		53.1			53.2			45.2			30.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	40.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	129.2	Sum of lost time (s)	0.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1096	86	37	2265	12	98	12	62	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3537		1681	1703	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3537		1681	1703	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	12	1130	89	38	2335	12	101	12	64	12	12	12
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	58	0	12	0
Lane Group Flow (vph)	12	1130	64	38	2347	0	57	56	6	0	24	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	1.5	89.9	89.9	4.3	92.7		11.3	11.3	11.3		3.0	
Effective Green, g (s)	1.1	91.6	89.9	3.9	94.4		11.1	11.1	11.1		2.8	
Actuated g/C Ratio	0.01	0.73	0.72	0.03	0.75		0.09	0.09	0.09		0.02	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	16	2585	1135	55	2663		149	151	140		39	
v/s Ratio Prot	0.01	0.32		c0.02	c0.66		c0.03	0.03			c0.01	
v/s Ratio Perm			0.04						0.00			
v/c Ratio	0.75	0.44	0.06	0.69	0.88		0.38	0.37	0.04		0.62	
Uniform Delay, d1	62.0	6.7	5.2	60.2	11.4		53.9	53.9	52.3		60.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	99.6	0.1	0.0	27.3	3.8		1.7	1.6	0.1		27.3	
Delay (s)	161.6	6.8	5.3	87.4	15.2		55.6	55.5	52.4		88.0	
Level of Service	F	A	A	F	B		E	E	D		F	
Approach Delay (s)		8.2			16.4			54.4			88.0	
Approach LOS		A			B			D			F	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2016 NO-BUILD PM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	492	1119	148	382	98	984	615	123	197	542	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	3539	1555	1610	3319	1548	1770	3539	1562
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	533	547	1243	164	424	109	1093	683	137	219	602	383
RTOR Reduction (vph)	0	0	376	0	0	83	0	0	98	0	0	270
Lane Group Flow (vph)	533	547	867	164	424	26	579	1197	39	219	602	113
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	31.0	54.0	54.0	10.0	33.8	33.8	39.7	39.7	39.7	22.0	22.0	22.0
Effective Green, g (s)	30.0	55.7	55.7	9.0	34.7	34.7	41.0	41.0	41.0	23.3	23.3	23.3
Actuated g/C Ratio	0.21	0.38	0.38	0.06	0.24	0.24	0.28	0.28	0.28	0.16	0.16	0.16
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	366	1359	599	110	847	372	455	938	438	284	569	251
v/s Ratio Prot	c0.30	0.15		0.09	0.12		0.36	c0.36		0.12	c0.17	
v/s Ratio Perm			c0.56			0.02			0.03			0.07
v/c Ratio	1.46	0.40	1.45	1.49	0.50	0.07	1.27	1.28	0.09	0.77	1.06	0.45
Uniform Delay, d1	57.5	32.5	44.6	68.0	47.7	42.7	52.0	52.0	38.3	58.3	60.8	55.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	220.0	0.1	210.9	262.7	0.2	0.0	138.9	132.6	0.0	11.2	54.0	0.5
Delay (s)	277.5	32.6	255.5	330.7	47.8	42.7	190.9	184.6	38.3	69.5	114.8	55.5
Level of Service	F	C	F	F	D	D	F	F	D	E	F	E
Approach Delay (s)		208.1			113.6			176.0			87.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	163.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.0
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	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	0	247	0	0	0	160	1661	0	0	1489	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00				1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	137	0	274	0	0	0	178	1846	0	0	1654	137
RTOR Reduction (vph)	0	0	115	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	137	159	0	0	0	178	1846	0	0	1654	120
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		17.6	17.6				12.0	121.5			105.5	105.5
Effective Green, g (s)		17.6	17.6				12.0	123.0			107.0	107.0
Actuated g/C Ratio		0.12	0.12				0.08	0.83			0.72	0.72
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		167	183				143	1542			1341	1117
v/s Ratio Prot							0.10	c0.99			c0.89	
v/s Ratio Perm		0.10	c0.10									0.08
v/c Ratio		0.82	0.87				1.24	1.20			1.23	0.11
Uniform Delay, d1		64.0	64.4				68.3	12.8			20.8	6.3
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		26.4	33.4				155.5	95.3			111.7	0.0
Delay (s)		90.4	97.8				223.8	108.1			132.5	6.3
Level of Service		F	F				F	F			F	A
Approach Delay (s)		95.3			0.0			118.3			122.9	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	118.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	148.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	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)	25	12	430	25	12	25	542	1698	12	12	1551	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1802	1535		1710		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1802	1535		1710		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	13	457	27	13	27	577	1806	13	13	1650	27
RTOR Reduction (vph)	0	0	431	0	17	0	0	0	2	0	0	6
Lane Group Flow (vph)	0	40	26	0	50	0	577	1806	11	13	1650	21
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		8.4	8.4		6.4		43.2	100.5	100.5	4.5	61.8	61.8
Effective Green, g (s)		7.8	7.8		5.8		42.2	102.2	100.5	3.5	63.5	63.5
Actuated g/C Ratio		0.06	0.06		0.04		0.31	0.76	0.74	0.03	0.47	0.47
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		104	88		73		552	2673	1151	46	1661	743
v/s Ratio Prot		c0.02			c0.03		c0.33	0.51		0.01	c0.47	
v/s Ratio Perm			0.02						0.01			0.01
v/c Ratio		0.38	0.30		0.68		1.05	0.68	0.01	0.28	0.99	0.03
Uniform Delay, d1		61.4	61.1		63.8		46.6	8.3	4.5	64.7	35.7	19.3
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.7		18.9		50.7	0.5	0.0	1.2	20.4	0.0
Delay (s)		62.3	61.8		82.7		97.2	8.8	4.5	65.9	56.1	19.3
Level of Service		E	E		F		F	A	A	E	E	B
Approach Delay (s)		61.9			82.7			30.1			55.6	
Approach LOS		E			F			C			E	

Intersection Summary			
HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	135	0	0	0	74	2153	0	0	1908	74
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6372	
Flt Permitted			1.00				0.06	1.00			1.00	
Satd. Flow (perm)			2787				119	3539			6372	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	159	0	0	0	87	2533	0	0	2245	87
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	138	0	0	0	87	2533	0	0	2327	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			9.2				62.8	62.8			62.8	
Effective Green, g (s)			9.2				62.8	62.8			62.8	
Actuated g/C Ratio			0.12				0.78	0.78			0.78	
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)			321				93	2778			5002	
v/s Ratio Prot								0.72			0.37	
v/s Ratio Perm			c0.05				c0.73					
v/c Ratio			0.43				0.94	0.91			0.47	
Uniform Delay, d1			33.0				7.0	6.5			2.9	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				76.9	5.8			0.3	
Delay (s)			33.9				83.9	12.3			3.2	
Level of Service			C				F	B			A	
Approach Delay (s)		33.9			0.0			14.7			3.2	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	25	50	455	25	1096	37	1071	283	1181	751	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	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.90		1.00	0.88	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1676		1610	2788	1441	1770	3539	1583	3433	3506	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1676		1610	2788	1441	1770	3539	1583	3433	3506	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	28	56	506	28	1218	41	1190	314	1312	834	56
RTOR Reduction (vph)	0	52	0	0	441	441	0	0	229	0	2	0
Lane Group Flow (vph)	69	32	0	405	297	168	41	1190	85	1312	888	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	11.4	11.4		28.0	28.0	28.0	6.0	40.5	40.5	52.6	87.1	
Effective Green, g (s)	11.4	11.4		28.0	28.0	28.0	6.0	42.0	40.5	52.6	88.6	
Actuated g/C Ratio	0.08	0.08		0.19	0.19	0.19	0.04	0.28	0.27	0.35	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	135	127		301	520	269	71	991	427	1204	2071	
v/s Ratio Prot	c0.04	0.02		c0.25	0.11		0.02	c0.34		c0.38	0.25	
v/s Ratio Perm						0.12			0.05			
v/c Ratio	0.51	0.25		1.35	0.86dr	0.63	0.58	1.20	0.20	1.09	0.43	
Uniform Delay, d1	66.6	65.3		61.0	55.5	56.2	70.8	54.0	42.2	48.7	16.8	
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	1.4	0.4		176.0	0.9	3.2	6.9	100.2	1.0	54.0	0.7	
Delay (s)	68.0	65.7		237.0	56.5	59.4	77.6	154.2	43.3	102.7	17.5	
Level of Service	E	E		F	E	E	E	F	D	F	B	
Approach Delay (s)		66.7			99.2			129.6			68.2	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	94.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	12	689	37	25	12	935	1231	50	12	874	307
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648			1773		1770	3515		1770	3381	
Flt Permitted		0.99			0.49		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648			895		1770	3515		1770	3381	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	13	725	39	26	13	984	1296	53	13	920	323
RTOR Reduction (vph)	0	97	0	0	5	0	0	2	0	0	24	0
Lane Group Flow (vph)	0	822	0	0	73	0	984	1347	0	13	1219	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		46.3			46.3		45.3	78.1		1.8	34.6	
Effective Green, g (s)		48.0			48.0		46.0	80.3		2.5	36.8	
Actuated g/C Ratio		0.34			0.34		0.32	0.56		0.02	0.26	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		554			301		570	1977		31	871	
v/s Ratio Prot		c0.50					c0.56	0.38		0.01	c0.36	
v/s Ratio Perm					0.08							
v/c Ratio		1.48			0.24		1.73	0.68		0.42	1.40	
Uniform Delay, d1		47.4			34.2		48.4	22.2		69.4	53.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		227.3			0.4		334.2	1.0		3.3	186.5	
Delay (s)		274.7			34.7		382.6	23.2		72.7	239.5	
Level of Service		F			C		F	C		E	F	
Approach Delay (s)		274.7			34.7			174.8			237.8	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	209.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	142.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	150.4%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	407	787	677	12	1083	923	1181	1231	12	579	751	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	452	874	752	13	1203	1026	1312	1368	13	643	834	410
RTOR Reduction (vph)	0	0	272	0	0	240	0	0	6	0	0	129
Lane Group Flow (vph)	452	874	480	13	1203	786	1312	1368	7	643	834	281
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.5	61.5	61.5	1.2	45.2	45.2	25.5	38.8	38.8	24.5	37.8	37.8
Effective Green, g (s)	18.0	62.0	62.0	1.7	45.7	45.7	26.0	40.3	40.3	25.0	39.3	39.3
Actuated g/C Ratio	0.12	0.43	0.43	0.01	0.32	0.32	0.18	0.28	0.28	0.17	0.27	0.27
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	220	1513	677	21	1115	499	616	984	440	305	959	429
v/s Ratio Prot	c0.26	0.25		0.01	0.34		c0.38	c0.39		c0.36	0.24	
v/s Ratio Perm			0.30			c0.50			0.00			0.18
v/c Ratio	2.05	0.58	0.71	0.62	1.08	1.57	2.13	1.39	0.02	2.11	0.87	0.65
Uniform Delay, d1	63.5	31.5	34.1	71.3	49.6	49.6	59.5	52.4	38.0	60.0	50.4	46.8
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	490.0	0.3	2.8	32.5	50.9	268.0	513.9	181.9	0.1	509.7	10.6	7.6
Delay (s)	553.5	31.9	36.9	103.9	100.6	317.7	573.4	234.3	38.0	569.7	61.0	54.4
Level of Service	F	C	D	F	F	F	F	F	D	F	E	D
Approach Delay (s)		147.2			199.9			398.5			232.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	254.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	25	12	185	25	517	25	1895	234	529	923	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1834	1529	1681	1704	1562	1770	5001		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1834	1529	1681	1704	1562	1770	5001		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	28	13	206	28	574	28	2106	260	588	1026	28
RTOR Reduction (vph)	0	0	13	0	0	347	0	10	0	0	0	9
Lane Group Flow (vph)	0	41	0	115	119	227	28	2356	0	588	1026	19
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	23.4	23.4	23.4	3.8	58.0		46.1	100.3	100.3
Effective Green, g (s)		3.0	3.0	23.9	23.9	23.9	4.3	60.5		46.6	102.8	102.8
Actuated g/C Ratio		0.02	0.02	0.16	0.16	0.16	0.03	0.40		0.31	0.69	0.69
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	268	272	249	51	2017		550	2425	1062
v/s Ratio Prot		c0.02		0.07	0.07		0.02	c0.47		c0.33	0.29	
v/s Ratio Perm			0.00			c0.15						0.01
v/c Ratio		1.11	0.01	0.43	0.44	0.91	0.55	1.17		1.07	0.42	0.02
Uniform Delay, d1		73.5	72.0	56.9	57.0	62.0	71.9	44.8		51.7	10.5	7.5
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		182.0	0.0	0.4	0.4	33.7	6.3	81.4		58.2	0.5	0.0
Delay (s)		255.5	72.1	57.3	57.4	95.7	78.2	126.1		109.9	11.0	7.6
Level of Service		F	E	E	E	F	E	F		F	B	A
Approach Delay (s)		211.3			84.6			125.6			46.3	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	93.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	25	25	1993	25	12	1366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3533		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3533		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	28	2214	28	13	1518
RTOR Reduction (vph)	26	0	0	0	0	0
Lane Group Flow (vph)	30	0	2242	0	13	1518
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	8.2		102.6		7.2	113.8
Effective Green, g (s)	8.2		102.6		7.2	113.8
Actuated g/C Ratio	0.06		0.79		0.06	0.88
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	107		2788		98	1631
v/s Ratio Prot	c0.02		0.63		0.01	c0.81
v/s Ratio Perm						
v/c Ratio	0.28		0.80		0.13	0.93
Uniform Delay, d1	58.1		7.9		58.4	5.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.4		2.6		0.4	11.0
Delay (s)	59.5		10.5		58.8	16.4
Level of Service	E		B		E	B
Approach Delay (s)	59.5		10.5			16.8
Approach LOS	E		B			B

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	234	25	0	1784	1304	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3407			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3407			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	28	0	1982	1449	96
RTOR Reduction (vph)	9	0	0	0	0	20
Lane Group Flow (vph)	279	0	0	1982	1449	76
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	13.2			78.8	78.8	78.8
Effective Green, g (s)	13.2			78.8	78.8	78.8
Actuated g/C Ratio	0.13			0.79	0.79	0.79
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	450			2789	1468	1247
v/s Ratio Prot	c0.08			0.56	c0.78	
v/s Ratio Perm						0.05
v/c Ratio	0.62			0.71	0.99	0.06
Uniform Delay, d1	41.0			5.1	10.1	2.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.5			1.6	20.6	0.1
Delay (s)	43.5			6.7	30.7	2.5
Level of Service	D			A	C	A
Approach Delay (s)	43.5			6.7	29.0	
Approach LOS	D			A	C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1279	37	12	1698	25	37	123	62	50	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.95		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1460		3093			1765			1742	
Flt Permitted		0.97	1.00		0.73			0.86			0.52	
Satd. Flow (perm)		1753	1460		2252			1535			925	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	1421	41	13	1887	28	41	137	69	56	56	56
RTOR Reduction (vph)	0	0	8	0	1	0	0	10	0	0	13	0
Lane Group Flow (vph)	0	1434	33	0	1927	0	0	237	0	0	155	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		110.0	110.0		110.0			22.0			22.0	
Effective Green, g (s)		110.0	110.0		110.0			22.0			22.0	
Actuated g/C Ratio		0.79	0.79		0.79			0.16			0.16	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1377	1147		1769			241			145	
v/s Ratio Prot												
v/s Ratio Perm		0.82	0.02		c0.86			0.15			c0.17	
v/c Ratio		1.04	0.03		1.09			0.98			1.07	
Uniform Delay, d1		15.0	3.3		15.0			58.8			59.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		35.8	0.0		50.2			52.7			95.1	
Delay (s)		50.8	3.3		65.2			111.5			154.1	
Level of Service		D	A		E			F			F	
Approach Delay (s)		49.4			65.2			111.5			154.1	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM Average Control Delay	66.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.0%	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)	615	751	25	50	886	12	25	542	135	123	419	824
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	683	834	28	56	984	13	28	602	150	137	466	916
RTOR Reduction (vph)	0	1	0	0	1	0	0	6	0	0	0	19
Lane Group Flow (vph)	683	861	0	56	996	0	28	746	0	137	466	897
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	30.0	81.2		5.6	56.8		2.4	41.8		7.0	46.4	76.4
Effective Green, g (s)	30.0	81.2		5.6	56.8		2.4	41.8		7.0	46.4	76.4
Actuated g/C Ratio	0.20	0.54		0.04	0.37		0.02	0.28		0.05	0.31	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	350	993		65	585		28	498		82	570	840
v/s Ratio Prot	c0.39	0.46		0.03	c0.64		0.02	c0.41		c0.08	0.25	0.21
v/s Ratio Perm												0.36
v/c Ratio	1.95	0.87		0.86	1.70		1.00	1.50		1.67	0.82	1.07
Uniform Delay, d1	60.8	30.5		72.6	47.4		74.6	54.9		72.3	48.7	37.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	438.4	8.4		63.7	323.7		170.1	234.7		349.1	9.4	50.9
Delay (s)	499.2	38.9		136.3	371.1		244.7	289.6		421.4	58.1	88.5
Level of Service	F	D		F	F		F	F		F	E	F
Approach Delay (s)		242.4			358.6			288.0			109.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	233.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	147.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	394	591	505	283	209	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1565	1770	1543
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1565	1770	1543
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	438	657	561	314	232	466
RTOR Reduction (vph)	0	0	0	67	0	366
Lane Group Flow (vph)	438	657	561	247	232	100
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	16.8	32.4	11.6	22.6	11.0	11.0
Effective Green, g (s)	16.8	32.4	11.6	22.6	11.0	11.0
Actuated g/C Ratio	0.33	0.63	0.23	0.44	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	579	1174	799	810	379	330
v/s Ratio Prot	c0.25	0.35	c0.16	0.07	c0.13	
v/s Ratio Perm				0.09		0.06
v/c Ratio	0.76	0.56	0.70	0.31	0.61	0.30
Uniform Delay, d1	15.5	5.4	18.3	9.3	18.3	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.6	2.3	0.1	2.1	0.2
Delay (s)	21.1	6.0	20.6	9.4	20.3	17.2
Level of Service	C	A	C	A	C	B
Approach Delay (s)		12.1	16.6		18.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	62	12	295	123	160	12	1119	37	74	1059	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1705		1770	1854		1770	1844	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1817		1770	1705		1770	1854		1770	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	67	13	317	132	172	13	1203	40	80	1139	80
RTOR Reduction (vph)	0	5	0	0	32	0	0	1	0	0	1	0
Lane Group Flow (vph)	40	75	0	317	272	0	13	1242	0	80	1218	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.9	12.0		23.2	30.3		1.0	90.0		6.2	95.2	
Effective Green, g (s)	4.7	11.8		23.0	30.1		0.8	89.8		6.0	95.0	
Actuated g/C Ratio	0.03	0.08		0.16	0.21		0.01	0.61		0.04	0.65	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	57	146		278	350		10	1136		72	1195	
v/s Ratio Prot	0.02	0.04		c0.18	c0.16		0.01	c0.67		c0.05	0.66	
v/s Ratio Perm												
v/c Ratio	0.70	0.52		1.14	0.78		1.30	1.09		1.11	1.02	
Uniform Delay, d1	70.3	64.7		61.8	55.1		72.9	28.4		70.3	25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.2	1.3		97.3	9.5		398.9	56.0		139.6	30.9	
Delay (s)	97.4	65.9		159.1	64.6		471.8	84.4		209.9	56.7	
Level of Service	F	E		F	E		F	F		F	E	
Approach Delay (s)		76.4			112.8			88.4			66.1	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	83.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	146.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	37	12	222	12	222	12	1194	74	110	947	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1786		1770	1556		1770	3503		1770	3532	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1786		1770	1556		1770	3503		1770	3532	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	27	41	13	244	13	244	13	1312	81	121	1041	13
RTOR Reduction (vph)	0	12	0	0	122	0	0	4	0	0	1	0
Lane Group Flow (vph)	27	42	0	244	135	0	13	1389	0	121	1053	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.8	6.8		12.2	17.2		0.5	37.9		6.1	43.5	
Effective Green, g (s)	1.8	6.8		12.2	17.2		0.5	38.9		6.1	44.5	
Actuated g/C Ratio	0.02	0.08		0.15	0.22		0.01	0.49		0.08	0.56	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	40	152		270	335		11	1703		135	1965	
v/s Ratio Prot	0.02	0.02		c0.14	c0.09		0.01	c0.40		c0.07	0.30	
v/s Ratio Perm												
v/c Ratio	0.68	0.28		0.90	0.40		1.18	0.82		0.90	0.54	
Uniform Delay, d1	38.8	34.3		33.3	27.0		39.8	17.5		36.6	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.9	0.4		30.2	0.3		338.7	3.2		46.4	0.3	
Delay (s)	68.8	34.7		63.5	27.3		378.5	20.6		83.0	11.5	
Level of Service	E	C		E	C		F	C		F	B	
Approach Delay (s)		46.0			44.9			24.0			18.9	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
16: Natoma St & Briggs Ranch Dr.

3/1/2010

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1292	123	0	1268	0	443
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1520	145	0	1492	0	521
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1665		2266	1520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1665		2266	1520
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			382		34	108

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1520	145	746	746	521
Volume Left	0	0	0	0	0
Volume Right	0	145	0	0	521
cSH	1700	1700	1700	1700	108
Volume to Capacity	0.89	0.09	0.44	0.44	4.84
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	1417.0		
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1132	357	911	911	664	1071
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1562	3433	2723	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1562	3433	2723	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1204	380	969	969	706	1139
RTOR Reduction (vph)	0	260	0	620	0	2
Lane Group Flow (vph)	1204	120	969	349	706	1137
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	33.5	33.5	38.1	38.1	24.4	66.5
Effective Green, g (s)	34.0	33.5	39.6	39.6	24.4	68.0
Actuated g/C Ratio	0.31	0.30	0.36	0.36	0.22	0.62
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1061	476	1236	980	762	979
v/s Ratio Prot	c0.35		0.28		0.21	c0.72
v/s Ratio Perm		0.08		0.13		
v/c Ratio	1.13	0.25	0.78	0.36	0.93	1.16
Uniform Delay, d1	38.0	28.8	31.4	25.8	41.9	21.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	72.6	0.1	3.3	0.2	16.9	84.1
Delay (s)	110.6	28.9	34.7	26.1	58.8	105.1
Level of Service	F	C	C	C	E	F
Approach Delay (s)	91.0		30.4		87.4	
Approach LOS	F		C		F	

Intersection Summary			
HCM Average Control Delay	67.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.2%	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)	1231	222	74	197	172	148	98	1021	160	123	467	972
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1368	247	82	219	191	164	109	1134	178	137	519	1080
RTOR Reduction (vph)	0	0	47	0	0	60	0	0	77	0	0	0
Lane Group Flow (vph)	1368	247	35	219	191	104	109	1134	101	137	519	1080
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	46.8	52.7	52.7	11.6	17.5	17.5	7.4	37.5	37.5	5.1	34.7	126.9
Effective Green, g (s)	47.3	54.2	54.2	12.1	19.0	19.0	7.9	39.0	39.0	5.6	36.7	126.9
Actuated g/C Ratio	0.37	0.43	0.43	0.10	0.15	0.15	0.06	0.31	0.31	0.04	0.29	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1280	1512	676	327	530	237	214	1088	857	151	1023	1583
v/s Ratio Prot	c0.40	0.07		0.06	0.05		0.03	c0.32		0.04	0.15	
v/s Ratio Perm			0.02			0.07			0.04			c0.68
v/c Ratio	1.07	0.16	0.05	0.67	0.36	0.44	0.51	1.04	0.12	0.91	0.51	0.68
Uniform Delay, d1	39.8	22.4	21.3	55.5	48.5	49.1	57.6	44.0	31.6	60.4	37.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.7	0.1	0.0	4.0	0.7	2.2	0.7	38.9	0.1	45.7	0.5	2.4
Delay (s)	85.5	22.5	21.3	59.5	49.2	51.3	58.3	82.9	31.7	106.1	38.1	2.4
Level of Service	F	C	C	E	D	D	E	F	C	F	D	A
Approach Delay (s)		73.2			53.7			74.6			21.2	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	2313	74	86	1489	12	62	12	86	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3535		1681	1711	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3535		1681	1711	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	12	2385	76	89	1535	12	64	12	89	12	12	12
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	82	0	12	0
Lane Group Flow (vph)	12	2385	64	89	1547	0	38	38	7	0	24	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.1	98.1	98.1	8.6	104.6		10.7	10.7	10.7		3.9	
Effective Green, g (s)	1.7	99.8	98.1	8.2	106.3		10.5	10.5	10.5		3.7	
Actuated g/C Ratio	0.01	0.72	0.71	0.06	0.77		0.08	0.08	0.08		0.03	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	22	2556	1124	105	2719		128	130	120		47	
v/s Ratio Prot	0.01	c0.67		c0.05	0.44		c0.02	0.02			c0.01	
v/s Ratio Perm			0.04						0.00			
v/c Ratio	0.55	0.93	0.06	0.85	0.57		0.30	0.29	0.06		0.52	
Uniform Delay, d1	67.9	16.4	6.1	64.4	6.5		60.4	60.3	59.3		66.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	16.4	7.1	0.0	42.4	0.3		1.3	1.3	0.2		9.6	
Delay (s)	84.3	23.5	6.1	106.8	6.8		61.7	61.6	59.5		76.0	
Level of Service	F	C	A	F	A		E	E	E		E	
Approach Delay (s)		23.2			12.3			60.5			76.0	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	138.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2010 BUILD AM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	175	667	120	393	109	1180	339	44	87	592	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1553	1770	3539	1554	1610	3286	1548	1770	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1553	1770	3539	1554	1610	3286	1548	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	194	194	741	133	437	121	1311	377	49	97	658	510
RTOR Reduction (vph)	0	0	524	0	0	103	0	0	29	0	0	139
Lane Group Flow (vph)	194	194	217	133	437	18	655	1033	20	97	658	371
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	17.0	24.3	24.3	12.0	20.1	20.1	56.2	56.2	56.2	30.1	30.1	30.1
Effective Green, g (s)	16.0	26.0	26.0	11.0	21.0	21.0	57.5	57.5	57.5	31.4	31.4	31.4
Actuated g/C Ratio	0.11	0.18	0.18	0.08	0.15	0.15	0.41	0.41	0.41	0.22	0.22	0.22
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	200	648	285	137	524	230	652	1332	627	392	783	346
v/s Ratio Prot	c0.11	0.05		0.08	0.12		c0.41	0.31		0.05	0.19	
v/s Ratio Perm			c0.14			0.01			0.01			c0.24
v/c Ratio	0.97	0.30	0.76	0.97	0.83	0.08	1.00	0.96dl	0.03	0.25	0.84	1.07
Uniform Delay, d1	62.7	50.1	55.0	65.3	58.8	52.1	42.2	36.6	25.4	45.5	52.9	55.2
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	54.6	0.1	10.2	67.4	10.5	0.1	36.4	2.6	0.0	0.1	7.8	68.6
Delay (s)	117.3	50.2	65.2	132.7	69.3	52.2	78.6	39.2	25.4	45.6	60.6	123.8
Level of Service	F	D	E	F	E	D	E	D	C	D	E	F
Approach Delay (s)		71.6			78.5			53.7			85.0	
Approach LOS		E			E			D			F	

Intersection Summary			
HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	141.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.4%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	0	132	0	0	0	164	1344	0	0	1335	131
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	194	0	147	0	0	0	182	1493	0	0	1483	146
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	194	19	0	0	0	182	1493	0	0	1483	125
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		19.0	19.0				13.0	121.5			104.5	104.5
Effective Green, g (s)		19.0	19.0				13.0	123.0			106.0	106.0
Actuated g/C Ratio		0.13	0.13				0.09	0.82			0.71	0.71
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		179	196				153	1528			1317	1096
v/s Ratio Prot							c0.10	0.80			c0.80	
v/s Ratio Perm		c0.14	0.01									0.08
v/c Ratio		1.08	0.10				1.19	0.98			1.13	0.11
Uniform Delay, d1		65.5	57.9				68.5	12.2			22.0	7.0
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		91.4	0.2				132.7	17.6			67.0	0.0
Delay (s)		156.9	58.1				201.2	29.9			89.0	7.1
Level of Service		F	E				F	C			F	A
Approach Delay (s)		114.3			0.0			48.5			81.7	
Approach LOS		F			A			D			F	

Intersection Summary			
HCM Average Control Delay	69.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.0%	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)	22	11	470	11	11	11	382	1431	11	11	1424	33
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1803	1544		1736		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1803	1544		1736		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	23	12	500	12	12	12	406	1522	12	12	1515	35
RTOR Reduction (vph)	0	0	392	0	12	0	0	0	3	0	0	10
Lane Group Flow (vph)	0	35	108	0	24	0	406	1522	9	12	1515	25
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		11.3	11.3		4.1		29.8	75.9	75.9	3.9	50.0	50.0
Effective Green, g (s)		10.7	10.7		3.5		28.8	77.6	75.9	2.9	51.7	51.7
Actuated g/C Ratio		0.10	0.10		0.03		0.26	0.70	0.69	0.03	0.47	0.47
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		174	149		55		460	2481	1062	46	1653	739
v/s Ratio Prot		0.02			c0.01		c0.23	0.43		0.01	c0.43	
v/s Ratio Perm			c0.07						0.01			0.02
v/c Ratio		0.20	0.72		0.44		0.88	0.61	0.01	0.26	0.92	0.03
Uniform Delay, d1		46.1	48.6		52.6		39.3	8.7	5.5	52.8	27.5	16.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2	13.7		2.1		17.4	0.3	0.0	1.1	8.2	0.0
Delay (s)		46.3	62.3		54.7		56.7	9.0	5.5	54.0	35.7	16.0
Level of Service		D	E		D		E	A	A	D	D	B
Approach Delay (s)		61.2			54.7			19.0			35.4	
Approach LOS		E			D			B			D	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	109	0	0	0	22	1792	0	0	1817	66
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6374	
Flt Permitted			1.00				0.08	1.00			1.00	
Satd. Flow (perm)			2787				148	3539			6374	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	128	0	0	0	26	2108	0	0	2138	78
RTOR Reduction (vph)	0	0	16	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	112	0	0	0	26	2108	0	0	2211	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			6.8				50.2	50.2			50.2	
Effective Green, g (s)			6.8				50.2	50.2			50.2	
Actuated g/C Ratio			0.10				0.77	0.77			0.77	
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)			292				114	2733			4923	
v/s Ratio Prot								c0.60			0.35	
v/s Ratio Perm			c0.04				0.18					
v/c Ratio			0.38				0.23	0.77			0.45	
Uniform Delay, d1			27.1				2.0	4.2			2.6	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.8				4.6	2.2			0.3	
Delay (s)			28.0				6.6	6.3			2.9	
Level of Service			C				A	A			A	
Approach Delay (s)		28.0			0.0			6.3			2.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	22	33	175	22	1027	22	754	340	888	962	22
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	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.91		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1693		1610	2753	1441	1770	3539	1583	3433	3528	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1693		1610	2753	1441	1770	3539	1583	3433	3528	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	24	37	194	24	1141	24	838	378	987	1069	24
RTOR Reduction (vph)	0	34	0	0	509	508	0	0	260	0	1	0
Lane Group Flow (vph)	37	27	0	175	105	62	24	838	118	987	1092	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	8.2	8.2		12.0	12.0	12.0	3.2	34.2	34.2	38.1	69.1	
Effective Green, g (s)	8.2	8.2		12.0	12.0	12.0	3.2	35.7	34.2	38.1	70.6	
Actuated g/C Ratio	0.07	0.07		0.11	0.11	0.11	0.03	0.32	0.31	0.35	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	132	126		176	300	157	51	1149	492	1189	2264	
v/s Ratio Prot	c0.02	0.02		c0.11	0.04		0.01	c0.24		c0.29	0.31	
v/s Ratio Perm						0.04			0.07			
v/c Ratio	0.28	0.21		0.99	0.86dr	0.40	0.47	0.73	0.24	0.83	0.48	
Uniform Delay, d1	48.1	47.9		49.0	45.4	45.6	52.6	32.9	28.2	33.0	10.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.3		65.8	0.3	0.6	2.5	4.1	1.1	4.8	0.7	
Delay (s)	48.5	48.2		114.7	45.7	46.2	55.1	37.0	29.4	37.8	11.0	
Level of Service	D	D		F	D	D	E	D	C	D	B	
Approach Delay (s)		48.3			54.8			35.0			23.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	11	863	44	11	11	208	941	11	11	1071	120
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1644			1758		1770	3532		1770	3478	
Flt Permitted		0.99			0.45		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1644			809		1770	3532		1770	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	12	908	46	12	12	219	991	12	12	1127	126
RTOR Reduction (vph)	0	107	0	0	5	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	1009	0	0	65	0	219	1002	0	12	1248	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		73.3			73.3		15.3	61.4		1.6	47.7	
Effective Green, g (s)		75.0			75.0		16.0	63.6		2.3	49.9	
Actuated g/C Ratio		0.49			0.49		0.10	0.42		0.02	0.33	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		806			397		185	1469		27	1135	
v/s Ratio Prot		c0.61					c0.12	0.28		0.01	c0.36	
v/s Ratio Perm					0.08							
v/c Ratio		1.25			0.16		1.18	0.68		0.44	1.10	
Uniform Delay, d1		38.9			21.6		68.4	36.4		74.7	51.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		123.5			0.2		124.4	1.4		4.2	58.1	
Delay (s)		162.5			21.8		192.8	37.8		78.9	109.6	
Level of Service		F			C		F	D		E	F	
Approach Delay (s)		162.5			21.8			65.6			109.3	
Approach LOS		F			C			E			F	

Intersection Summary			
HCM Average Control Delay	109.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	152.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	236	841	907	22	809	514	328	366	11	317	1650	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	262	934	1008	24	899	571	364	407	12	352	1833	194
RTOR Reduction (vph)	0	0	102	0	0	355	0	0	9	0	0	55
Lane Group Flow (vph)	262	934	906	24	899	216	364	407	3	352	1833	139
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	20.9	58.8	58.8	1.6	39.5	39.5	9.5	35.5	35.5	30.1	56.1	56.1
Effective Green, g (s)	21.4	59.3	59.3	2.1	40.0	40.0	10.0	37.0	37.0	30.6	57.6	57.6
Actuated g/C Ratio	0.15	0.41	0.41	0.01	0.28	0.28	0.07	0.26	0.26	0.21	0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	261	1447	647	26	976	437	237	903	404	374	1406	629
v/s Ratio Prot	c0.15	0.26		0.01	0.25		c0.11	0.11		0.20	c0.52	
v/s Ratio Perm			c0.57			0.14			0.00			0.09
v/c Ratio	1.00	0.65	1.40	0.92	0.92	0.49	1.54	0.45	0.01	0.94	1.30	0.22
Uniform Delay, d1	61.8	34.4	42.8	71.4	51.0	44.0	67.5	45.4	40.3	56.3	43.7	28.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.7	0.7	189.6	140.5	13.4	0.3	261.2	1.6	0.0	31.4	142.0	0.8
Delay (s)	118.5	35.2	232.5	211.9	64.4	44.3	328.7	47.1	40.3	87.7	185.7	29.7
Level of Service	F	D	F	F	E	D	F	D	D	F	F	C
Approach Delay (s)		135.3			59.1			177.9			158.4	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	131.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.1%	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)	11	22	22	219	0	175	11	519	219	120	2470	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1529	1681	1681	1561	1770	4859		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1529	1681	1681	1561	1770	4859		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	24	24	243	0	194	12	577	243	133	2744	12
RTOR Reduction (vph)	0	0	24	0	0	127	0	38	0	0	0	2
Lane Group Flow (vph)	0	36	0	121	122	67	12	782	0	133	2744	10
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	17.0	17.0	17.0	1.7	95.3		15.2	108.8	108.8
Effective Green, g (s)		3.0	3.0	17.5	17.5	17.5	2.2	97.8		15.7	111.3	111.3
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.01	0.65		0.10	0.74	0.74
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	196	196	182	26	3168		185	2626	1150
v/s Ratio Prot		c0.02		0.07	c0.07		0.01	0.16		c0.08	c0.78	
v/s Ratio Perm			0.00			0.04						0.01
v/c Ratio		0.97	0.02	0.62	0.62	0.37	0.46	0.25		0.72	1.04	0.01
Uniform Delay, d1		73.5	72.1	63.1	63.1	61.1	73.3	10.8		65.0	19.4	5.0
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		136.0	0.1	4.0	4.4	0.5	4.7	0.2		10.6	30.7	0.0
Delay (s)		209.5	72.1	67.1	67.5	61.6	78.0	11.0		75.6	50.1	5.0
Level of Service		F	E	E	E	E	E	B		E	D	A
Approach Delay (s)		154.5			64.8			12.0			51.1	
Approach LOS		F			E			B			D	

Intersection Summary			
HCM Average Control Delay	46.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	11	1333	11	11	1158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3535		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3535		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	12	1481	12	12	1287
RTOR Reduction (vph)	11	0	0	0	0	0
Lane Group Flow (vph)	13	0	1493	0	12	1287
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	5.0		59.4		3.6	67.0
Effective Green, g (s)	5.0		59.4		3.6	67.0
Actuated g/C Ratio	0.06		0.74		0.04	0.84
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	106		2625		80	1560
v/s Ratio Prot	c0.01		0.42		0.01	c0.69
v/s Ratio Perm						
v/c Ratio	0.12		0.57		0.15	0.82
Uniform Delay, d1	35.4		4.6		36.7	3.4
Progression Factor	1.00		0.77		1.00	1.00
Incremental Delay, d2	0.5		0.8		0.6	5.1
Delay (s)	35.9		4.3		37.3	8.5
Level of Service	D		A		D	A
Approach Delay (s)	35.9		4.3			8.8
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	33	11	0	1311	1082	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3354			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3354			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	12	0	1457	1202	97
RTOR Reduction (vph)	11	0	0	0	0	17
Lane Group Flow (vph)	38	0	0	1457	1202	80
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	6.0			66.0	66.0	66.0
Effective Green, g (s)	6.0			66.0	66.0	66.0
Actuated g/C Ratio	0.08			0.82	0.82	0.82
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	252			2920	1537	1306
v/s Ratio Prot	c0.01			0.41	c0.65	
v/s Ratio Perm						0.05
v/c Ratio	0.15			0.50	0.78	0.06
Uniform Delay, d1	34.6			2.1	3.5	1.3
Progression Factor	1.00			0.23	1.13	2.15
Incremental Delay, d2	0.2			0.5	2.6	0.1
Delay (s)	34.9			1.0	6.5	2.8
Level of Service	C			A	A	A
Approach Delay (s)	34.9			1.0	6.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	4.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1071	11	11	1289	11	11	22	11	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.97			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1483		3096			1765			1741	
Flt Permitted		0.98	1.00		0.94			0.91			0.88	
Satd. Flow (perm)		1783	1483		2924			1633			1565	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	1190	12	12	1432	12	12	24	12	12	12	12
RTOR Reduction (vph)	0	0	2	0	0	0	0	11	0	0	11	0
Lane Group Flow (vph)	0	1202	10	0	1456	0	0	37	0	0	25	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		65.1	65.1		65.1			6.9			6.9	
Effective Green, g (s)		65.1	65.1		65.1			6.9			6.9	
Actuated g/C Ratio		0.81	0.81		0.81			0.09			0.09	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1451	1207		2379			141			135	
v/s Ratio Prot												
v/s Ratio Perm		c0.67	0.01		0.50			c0.02			0.02	
v/c Ratio		0.83	0.01		0.61			0.26			0.19	
Uniform Delay, d1		4.3	1.4		2.8			34.2			33.9	
Progression Factor		0.28	0.21		1.00			1.00			1.00	
Incremental Delay, d2		3.7	0.0		1.2			0.4			0.2	
Delay (s)		4.9	0.3		3.9			34.5			34.2	
Level of Service		A	A		A			C			C	
Approach Delay (s)		4.9			3.9			34.5			34.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	732	11	22	415	24	22	404	87	55	361	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1859		1770	1552		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1859		1770	1552		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	813	12	24	461	27	24	449	97	61	401	971
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	0	53
Lane Group Flow (vph)	389	825	0	24	486	0	24	539	0	61	401	918
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	27.2	57.0		1.8	31.6		1.2	33.6		4.0	36.4	63.6
Effective Green, g (s)	27.2	57.0		1.8	31.6		1.2	33.6		4.0	36.4	63.6
Actuated g/C Ratio	0.24	0.51		0.02	0.28		0.01	0.30		0.04	0.32	0.57
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	428	943		28	436		19	542		63	603	952
v/s Ratio Prot	0.22	0.44		0.01	c0.31		0.01	0.30		c0.03	0.22	c0.23
v/s Ratio Perm												0.35
v/c Ratio	0.91	0.87		0.86	1.11		1.26	0.99		0.97	0.67	0.96
Uniform Delay, d1	41.4	24.5		55.2	40.4		55.6	39.3		54.1	32.7	23.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	22.3	9.4		106.2	78.0		298.7	37.1		100.6	3.1	20.8
Delay (s)	63.7	33.9		161.4	118.4		354.3	76.4		154.7	35.8	44.1
Level of Service	E	C		F	F		F	E		F	D	D
Approach Delay (s)		43.4			120.4			88.1			46.5	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM Average Control Delay	62.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	112.4	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	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	426	437	197	153	328	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1570	1770	1546
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1570	1770	1546
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	473	486	219	170	364	293
RTOR Reduction (vph)	0	0	0	58	0	216
Lane Group Flow (vph)	473	486	219	112	364	77
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	17.4	29.2	7.8	21.1	13.3	13.3
Effective Green, g (s)	17.4	29.2	7.8	21.1	13.3	13.3
Actuated g/C Ratio	0.34	0.58	0.15	0.42	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	610	1077	547	780	466	407
v/s Ratio Prot	c0.27	c0.26	0.06	0.04	c0.21	
v/s Ratio Perm				0.03		0.05
v/c Ratio	0.78	0.45	0.40	0.14	0.78	0.19
Uniform Delay, d1	14.8	6.1	19.2	9.1	17.3	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.3	0.2	0.0	7.7	0.1
Delay (s)	21.0	6.4	19.4	9.1	24.9	14.5
Level of Service	C	A	B	A	C	B
Approach Delay (s)		13.6	14.9		20.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	55	11	98	33	55	11	712	44	55	1202	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1816		1770	1687		1770	1847		1770	1858	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1816		1770	1687		1770	1847		1770	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	24	59	12	105	35	59	12	766	47	59	1292	24
RTOR Reduction (vph)	0	6	0	0	42	0	0	1	0	0	0	0
Lane Group Flow (vph)	24	65	0	105	52	0	12	812	0	59	1316	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.5	9.5		9.9	15.9		0.9	99.5		6.8	105.4	
Effective Green, g (s)	3.3	9.3		9.7	15.7		0.7	99.3		6.6	105.2	
Actuated g/C Ratio	0.02	0.07		0.07	0.11		0.00	0.70		0.05	0.75	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	41	120		122	188		9	1302		83	1387	
v/s Ratio Prot	0.01	c0.04		c0.06	0.03		0.01	0.44		c0.03	c0.71	
v/s Ratio Perm												
v/c Ratio	0.59	0.54		0.86	0.28		1.33	0.62		0.71	0.95	
Uniform Delay, d1	68.1	63.8		64.9	57.4		70.1	11.0		66.2	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.0	2.7		41.2	0.3		429.4	0.9		21.1	13.7	
Delay (s)	81.1	66.4		106.1	57.7		499.5	11.9		87.3	29.2	
Level of Service	F	E		F	E		F	B		F	C	
Approach Delay (s)		70.1			83.2			19.0			31.7	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	11	11	87	11	109	11	767	33	98	1180	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1703		1770	1567		1770	3514		1770	3534	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1703		1770	1567		1770	3514		1770	3534	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	12	12	12	96	12	120	12	843	36	108	1297	12
RTOR Reduction (vph)	0	11	0	0	102	0	0	3	0	0	0	0
Lane Group Flow (vph)	12	13	0	96	30	0	12	876	0	108	1309	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.4	3.7		5.4	8.7		0.7	26.1		5.8	31.2	
Effective Green, g (s)	0.4	3.7		5.4	8.7		0.7	27.1		5.8	32.2	
Actuated g/C Ratio	0.01	0.06		0.09	0.15		0.01	0.47		0.10	0.56	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	12	109		165	235		21	1642		177	1962	
v/s Ratio Prot	0.01	0.01		c0.05	c0.02		0.01	0.25		c0.06	c0.37	
v/s Ratio Perm												
v/c Ratio	1.00	0.12		0.58	0.13		0.57	0.53		0.61	0.67	
Uniform Delay, d1	28.8	25.6		25.2	21.4		28.5	11.0		25.0	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	259.8	0.2		3.3	0.1		21.2	0.3		4.3	0.9	
Delay (s)	288.6	25.8		28.6	21.5		49.7	11.3		29.3	10.0	
Level of Service	F	C		C	C		D	B		C	A	
Approach Delay (s)		113.4			24.4			11.8			11.5	
Approach LOS		F			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	58.0	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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	734	109	0	1410	0	219
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	864	128	0	1659	0	258
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			992		1693	864
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			992		1693	864
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	13
cM capacity (veh/h)			693		84	298

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	864	128	829	829	258
Volume Left	0	0	0	0	0
Volume Right	0	128	0	0	258
cSH	1700	1700	1700	1700	298
Volume to Capacity	0.51	0.08	0.49	0.49	0.87
Queue Length 95th (ft)	0	0	0	0	191
Control Delay (s)	0.0	0.0	0.0	0.0	61.9
Lane LOS					F
Approach Delay (s)	0.0		0.0		61.9
Approach LOS					F

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	896	306	1104	859	374	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2724	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2724	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	953	326	1174	914	398	616
RTOR Reduction (vph)	0	207	0	559	0	7
Lane Group Flow (vph)	953	119	1174	355	398	609
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	21.0	21.0	25.5	25.5	9.0	38.5
Effective Green, g (s)	21.5	21.0	27.0	27.0	9.0	40.0
Actuated g/C Ratio	0.31	0.30	0.39	0.39	0.13	0.58
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1062	472	1334	1058	445	911
v/s Ratio Prot	c0.28		c0.34		c0.12	0.38
v/s Ratio Perm		0.08		0.13		
v/c Ratio	0.90	0.25	0.88	0.34	0.89	0.67
Uniform Delay, d1	22.9	18.3	19.7	14.9	29.8	10.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.8	0.1	7.1	0.2	19.5	1.9
Delay (s)	32.7	18.4	26.8	15.1	49.3	12.0
Level of Service	C	B	C	B	D	B
Approach Delay (s)	29.1		21.7		26.7	
Approach LOS	C		C		C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	787	120	55	175	240	66	104	208	142	109	885	1116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	874	133	61	194	267	73	116	231	158	121	983	1240
RTOR Reduction (vph)	0	0	38	0	0	60	0	0	106	0	0	0
Lane Group Flow (vph)	874	133	23	194	267	13	116	231	52	121	983	1240
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	30.9	38.5	38.5	9.9	17.5	17.5	4.5	33.6	33.6	4.7	33.3	106.7
Effective Green, g (s)	31.4	40.0	40.0	10.4	19.0	19.0	5.0	35.1	35.1	5.2	35.3	106.7
Actuated g/C Ratio	0.29	0.37	0.37	0.10	0.18	0.18	0.05	0.33	0.33	0.05	0.33	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1010	1327	593	335	630	282	161	1164	917	167	1171	1583
v/s Ratio Prot	c0.25	0.04		0.06	0.08		0.03	0.07		0.04	0.28	
v/s Ratio Perm			0.01			0.01			0.02			c0.78
v/c Ratio	0.87	0.10	0.04	0.58	0.42	0.05	0.72	0.20	0.06	0.72	0.84	0.78
Uniform Delay, d1	35.6	21.7	21.2	46.1	39.0	36.3	50.2	25.7	24.5	50.0	33.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	0.0	0.0	1.5	0.8	0.1	12.6	0.1	0.0	12.4	5.6	4.0
Delay (s)	43.3	21.7	21.2	47.6	39.8	36.5	62.7	25.8	24.5	62.4	38.7	4.0
Level of Service	D	C	C	D	D	D	E	C	C	E	D	A
Approach Delay (s)		39.3			42.2			33.9			21.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	0.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	973	76	33	2012	11	87	11	55	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3536		1681	1703	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	1003	78	34	2074	11	90	11	57	11	11	11
RTOR Reduction (vph)	0	0	28	0	0	0	0	0	52	0	11	0
Lane Group Flow (vph)	11	1003	50	34	2085	0	50	51	5	0	22	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.7	57.5	57.5	3.8	60.6		8.8	8.8	8.8		2.9	
Effective Green, g (s)	0.3	59.2	57.5	3.4	62.3		8.6	8.6	8.6		2.7	
Actuated g/C Ratio	0.00	0.66	0.64	0.04	0.69		0.10	0.10	0.10		0.03	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	6	2330	1012	67	2450		161	163	151		53	
v/s Ratio Prot	0.01	0.28		c0.02	c0.59		0.03	c0.03			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	1.83	0.43	0.05	0.51	0.85		0.31	0.31	0.04		0.42	
Uniform Delay, d1	44.8	7.3	6.0	42.4	10.3		37.9	37.9	36.9		42.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	719.2	0.1	0.0	3.1	3.1		1.1	1.1	0.1		5.5	
Delay (s)	764.0	7.5	6.1	45.5	13.4		39.0	39.0	37.0		48.4	
Level of Service	F	A	A	D	B		D	D	D		D	
Approach Delay (s)		15.0			13.9			38.3			48.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2010 BUILD PM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	426	437	994	131	339	87	896	548	109	175	481	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	3539	1555	1610	3318	1548	1770	3539	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	3539	1555	1610	3318	1548	1770	3539	1562
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	473	486	1104	146	377	97	996	609	121	194	534	340
RTOR Reduction (vph)	0	0	369	0	0	78	0	0	88	0	0	271
Lane Group Flow (vph)	473	486	735	146	377	19	528	1077	33	194	534	69
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	39.0	55.0	55.0	10.0	26.8	26.8	38.7	38.7	38.7	21.8	21.8	21.8
Effective Green, g (s)	38.0	56.7	56.7	9.0	27.7	27.7	40.0	40.0	40.0	23.1	23.1	23.1
Actuated g/C Ratio	0.26	0.39	0.39	0.06	0.19	0.19	0.28	0.28	0.28	0.16	0.16	0.16
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	465	1386	610	110	677	297	445	917	428	282	565	249
v/s Ratio Prot	0.27	0.14		c0.08	0.11		c0.33	0.32		0.11	c0.15	
v/s Ratio Perm			c0.47			0.01			0.02			0.04
v/c Ratio	1.02	0.35	1.20	1.33	0.56	0.06	1.19	1.17	0.08	0.69	0.95	0.28
Uniform Delay, d1	53.4	31.1	44.0	67.9	53.0	47.9	52.4	52.4	38.8	57.4	60.2	53.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.1	0.1	106.9	196.9	0.6	0.0	104.6	90.0	0.0	5.5	24.5	0.2
Delay (s)	99.5	31.1	151.0	264.8	53.6	48.0	157.0	142.4	38.8	62.9	84.8	53.7
Level of Service	F	C	F	F	D	D	F	F	D	E	F	D
Approach Delay (s)		111.0			102.4			139.6			70.9	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	111.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	144.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	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)	109	0	219	0	0	0	143	1499	0	0	1322	109
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1546				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1546				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	121	0	243	0	0	0	159	1666	0	0	1469	121
RTOR Reduction (vph)	0	0	127	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	121	116	0	0	0	159	1666	0	0	1469	104
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		16.4	16.4				11.0	121.6			106.6	106.6
Effective Green, g (s)		16.4	16.4				11.0	123.1			108.1	108.1
Actuated g/C Ratio		0.11	0.11				0.07	0.83			0.73	0.73
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		157	172				132	1555			1365	1137
v/s Ratio Prot							0.09	c0.89			0.79	
v/s Ratio Perm		c0.09	0.07									0.07
v/c Ratio		0.77	0.67				1.20	1.07			1.08	0.09
Uniform Delay, d1		63.7	63.0				68.2	12.2			19.7	5.6
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		20.5	10.0				143.5	44.6			47.7	0.0
Delay (s)		84.2	72.9				211.8	56.8			67.4	5.7
Level of Service		F	E				F	E			E	A
Approach Delay (s)		76.7			0.0			70.3			62.7	
Approach LOS		E			A			E			E	

Intersection Summary			
HCM Average Control Delay	67.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	147.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.3%	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)	22	11	382	22	11	22	481	1533	11	11	1377	22
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1803	1535		1713		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1803	1535		1713		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	23	12	406	23	12	23	512	1631	12	12	1465	23
RTOR Reduction (vph)	0	0	383	0	16	0	0	0	2	0	0	6
Lane Group Flow (vph)	0	35	23	0	42	0	512	1631	10	12	1465	17
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		7.8	7.8		5.8		42.8	95.0	95.0	4.5	56.7	56.7
Effective Green, g (s)		7.2	7.2		5.2		41.8	96.7	95.0	3.5	58.4	58.4
Actuated g/C Ratio		0.06	0.06		0.04		0.33	0.75	0.74	0.03	0.45	0.45
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		101	86		69		575	2661	1144	48	1607	719
v/s Ratio Prot		c0.02			c0.02		c0.29	0.46		0.01	c0.41	
v/s Ratio Perm			0.01						0.01			0.01
v/c Ratio		0.35	0.26		0.60		0.89	0.61	0.01	0.25	0.91	0.02
Uniform Delay, d1		58.4	58.2		60.7		41.2	7.3	4.4	61.3	32.7	19.4
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.6		9.8		15.5	0.3	0.0	1.0	8.1	0.0
Delay (s)		59.2	58.8		70.5		56.7	7.6	4.4	62.3	40.7	19.4
Level of Service		E	E		E		E	A	A	E	D	B
Approach Delay (s)		58.8			70.5			19.3			40.6	
Approach LOS		E			E			B			D	

Intersection Summary			
HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	120	0	0	0	66	1937	0	0	1694	66
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6372	
Flt Permitted			1.00				0.07	1.00			1.00	
Satd. Flow (perm)			2787				135	3539			6372	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	141	0	0	0	78	2279	0	0	1993	78
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	98	0	0	0	78	2279	0	0	2067	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			8.5				73.5	73.5			73.5	
Effective Green, g (s)			8.5				73.5	73.5			73.5	
Actuated g/C Ratio			0.09				0.82	0.82			0.82	
Clearance Time (s)			4.0				4.0	4.0			4.0	
Vehicle Extension (s)			3.0				3.0	3.0			3.0	
Lane Grp Cap (vph)			263				110	2890			5204	
v/s Ratio Prot								c0.64			0.32	
v/s Ratio Perm			c0.04				0.58					
v/c Ratio			0.37				0.71	0.79			0.40	
Uniform Delay, d1			38.2				3.6	4.2			2.2	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				32.0	2.3			0.2	
Delay (s)			39.1				35.6	6.5			2.5	
Level of Service			D				D	A			A	
Approach Delay (s)		39.1			0.0			7.5			2.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	22	44	427	22	998	33	951	251	1049	667	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.90		1.00	0.88	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1675		1610	2791	1441	1770	3539	1583	3433	3506	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1675		1610	2791	1441	1770	3539	1583	3433	3506	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	24	49	474	24	1109	37	1057	279	1166	741	49
RTOR Reduction (vph)	0	45	0	0	455	454	0	0	204	0	2	0
Lane Group Flow (vph)	61	28	0	374	224	100	37	1057	75	1166	788	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	10.9	10.9		27.0	27.0	27.0	5.5	40.5	40.5	54.1	89.1	
Effective Green, g (s)	10.9	10.9		27.0	27.0	27.0	5.5	42.0	40.5	54.1	90.6	
Actuated g/C Ratio	0.07	0.07		0.18	0.18	0.18	0.04	0.28	0.27	0.36	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	129	122		290	502	259	65	991	427	1238	2118	
v/s Ratio Prot	c0.03	0.02		c0.23	0.08		0.02	c0.30		c0.34	0.22	
v/s Ratio Perm						0.07			0.05			
v/c Ratio	0.47	0.23		1.29	0.45	0.39	0.57	1.07	0.18	0.94	0.37	
Uniform Delay, d1	66.8	65.6		61.5	54.8	54.2	71.1	54.0	42.0	46.4	15.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.3		153.8	0.2	0.3	6.7	48.1	0.9	13.8	0.5	
Delay (s)	67.8	65.9		215.3	55.1	54.5	77.7	102.1	42.9	60.2	15.7	
Level of Service	E	E		F	E	D	E	F	D	E	B	
Approach Delay (s)		66.8			92.2			89.4			42.2	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM Average Control Delay	71.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.2%	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)	153	11	612	33	22	11	830	1093	44	11	799	273
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648			1771		1770	3516		1770	3384	
Flt Permitted		0.99			0.52		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648			947		1770	3516		1770	3384	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	12	644	35	23	12	874	1151	46	12	841	287
RTOR Reduction (vph)	0	113	0	0	6	0	0	2	0	0	27	0
Lane Group Flow (vph)	0	704	0	0	64	0	874	1195	0	12	1101	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		37.3			37.3		39.3	67.8		1.1	29.6	
Effective Green, g (s)		39.0			39.0		40.0	70.0		1.8	31.8	
Actuated g/C Ratio		0.32			0.32		0.33	0.57		0.01	0.26	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		523			301		577	2004		26	876	
v/s Ratio Prot		c0.43					c0.49	0.34		0.01	c0.33	
v/s Ratio Perm					0.07							
v/c Ratio		1.35			0.21		1.51	0.60		0.46	1.26	
Uniform Delay, d1		41.9			30.7		41.4	17.2		60.0	45.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		168.5			0.4		240.5	0.5		4.7	124.7	
Delay (s)		210.4			31.0		281.9	17.7		64.7	170.2	
Level of Service		F			C		F	B		E	F	
Approach Delay (s)		210.4			31.0			129.2			169.1	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	154.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	122.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	135.4%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	361	699	601	11	962	820	1049	1093	11	514	683	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	401	777	668	12	1069	911	1166	1214	12	571	759	372
RTOR Reduction (vph)	0	0	291	0	0	261	0	0	7	0	0	139
Lane Group Flow (vph)	401	777	377	12	1069	650	1166	1214	5	571	759	233
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.5	60.7	60.7	1.0	43.2	43.2	27.5	37.8	37.8	26.5	36.8	36.8
Effective Green, g (s)	19.0	61.2	61.2	1.5	43.7	43.7	28.0	39.3	39.3	27.0	38.3	38.3
Actuated g/C Ratio	0.13	0.42	0.42	0.01	0.30	0.30	0.19	0.27	0.27	0.19	0.26	0.26
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	232	1494	668	18	1067	477	663	959	429	330	935	418
v/s Ratio Prot	c0.23	0.22		0.01	0.30		c0.34	c0.34		c0.32	0.21	
v/s Ratio Perm			0.24			c0.41			0.00			0.15
v/c Ratio	1.73	0.52	0.56	0.67	1.00	1.36	1.76	1.27	0.01	1.73	0.81	0.56
Uniform Delay, d1	63.0	31.0	31.8	71.5	50.6	50.6	58.5	52.8	38.7	59.0	50.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	345.3	0.2	0.7	54.1	28.0	176.7	347.6	128.0	0.1	341.1	7.6	5.3
Delay (s)	408.3	31.2	32.4	125.6	78.7	227.4	406.1	180.9	38.7	400.1	57.6	51.3
Level of Service	F	C	C	F	E	F	F	F	D	F	E	D
Approach Delay (s)		113.5			146.9			289.9			171.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	187.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	22	11	164	22	459	22	1683	208	470	836	22
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	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1832	1530	1681	1704	1561	1770	5001		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1832	1530	1681	1704	1561	1770	5001		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	24	12	182	24	510	24	1870	231	522	929	24
RTOR Reduction (vph)	0	0	12	0	0	393	0	10	0	0	0	7
Lane Group Flow (vph)	0	36	0	102	104	117	24	2091	0	522	929	17
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.6	2.6	16.8	16.8	16.8	4.0	59.6		51.0	106.6	106.6
Effective Green, g (s)		3.1	3.1	17.3	17.3	17.3	4.5	62.1		51.5	109.1	109.1
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.03	0.41		0.34	0.73	0.73
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		38	32	194	197	180	53	2070		608	2574	1127
v/s Ratio Prot		c0.02		0.06	0.06		0.01	c0.42		c0.29	0.26	
v/s Ratio Perm			0.00			c0.08						0.01
v/c Ratio		0.95	0.01	0.53	0.53	0.65	0.45	1.01		0.86	0.36	0.02
Uniform Delay, d1		73.4	71.9	62.5	62.5	63.5	71.5	43.9		45.9	7.6	5.6
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		122.9	0.0	1.2	1.2	6.3	2.2	22.3		11.2	0.4	0.0
Delay (s)		196.3	72.0	63.7	63.7	69.7	73.8	66.2		57.0	8.0	5.7
Level of Service		F	E	E	E	E	E	E		E	A	A
Approach Delay (s)		165.2			68.0			66.3			25.3	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	22	22	1770	22	11	1213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3533		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3533		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	24	1967	24	12	1348
RTOR Reduction (vph)	22	0	0	0	0	0
Lane Group Flow (vph)	26	0	1991	0	12	1348
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.6		77.8		3.6	85.4
Effective Green, g (s)	6.6		77.8		3.6	85.4
Actuated g/C Ratio	0.07		0.78		0.04	0.85
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	112		2749		64	1591
v/s Ratio Prot	c0.02		0.56		0.01	c0.72
v/s Ratio Perm						
v/c Ratio	0.23		0.72		0.19	0.85
Uniform Delay, d1	44.3		5.6		46.8	3.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.7		0.9	5.8
Delay (s)	45.3		7.3		47.7	9.6
Level of Service	D		A		D	A
Approach Delay (s)	45.3		7.3			10.0
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	208	22	0	1584	1158	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3408			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3408			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	231	24	0	1760	1287	84
RTOR Reduction (vph)	10	0	0	0	0	19
Lane Group Flow (vph)	245	0	0	1760	1287	65
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	12.0			70.0	70.0	70.0
Effective Green, g (s)	12.0			70.0	70.0	70.0
Actuated g/C Ratio	0.13			0.78	0.78	0.78
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	454			2753	1449	1231
v/s Ratio Prot	c0.07			0.50	c0.69	
v/s Ratio Perm						0.04
v/c Ratio	0.54			0.64	0.89	0.05
Uniform Delay, d1	36.4			4.4	7.2	2.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.2			1.2	8.4	0.1
Delay (s)	37.6			5.6	15.6	2.4
Level of Service	D			A	B	A
Approach Delay (s)	37.6			5.6	14.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1136	33	11	1508	22	33	109	55	44	44	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.96		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1475		3093			1765			1742	
Flt Permitted		0.98	1.00		0.90			0.91			0.64	
Satd. Flow (perm)		1771	1475		2781			1613			1132	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	1262	37	12	1676	24	37	121	61	49	49	49
RTOR Reduction (vph)	0	0	9	0	1	0	0	15	0	0	19	0
Lane Group Flow (vph)	0	1274	28	0	1711	0	0	204	0	0	128	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		76.0	76.0		76.0			16.0			16.0	
Effective Green, g (s)		76.0	76.0		76.0			16.0			16.0	
Actuated g/C Ratio		0.76	0.76		0.76			0.16			0.16	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1346	1121		2114			258			181	
v/s Ratio Prot												
v/s Ratio Perm		c0.72	0.02		0.62			c0.13			0.11	
v/c Ratio		0.95	0.03		0.81			0.79			0.71	
Uniform Delay, d1		10.3	2.9		7.5			40.4			39.8	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		14.7	0.0		3.5			14.2			9.8	
Delay (s)		25.0	3.0		11.0			54.6			49.5	
Level of Service		C	A		B			D			D	
Approach Delay (s)		24.3			11.0			54.6			49.5	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.8%	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)	546	667	22	44	787	11	22	481	120	111	372	732
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	607	741	24	49	874	12	24	534	133	123	413	813
RTOR Reduction (vph)	0	1	0	0	1	0	0	6	0	0	0	28
Lane Group Flow (vph)	607	764	0	49	885	0	24	661	0	123	413	785
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	31.0	82.2		5.6	56.8		2.4	41.8		6.0	45.4	76.4
Effective Green, g (s)	31.0	82.2		5.6	56.8		2.4	41.8		6.0	45.4	76.4
Actuated g/C Ratio	0.20	0.54		0.04	0.37		0.02	0.28		0.04	0.30	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	362	1005		65	585		28	498		70	558	840
v/s Ratio Prot	c0.34	0.41		0.03	c0.57		0.01	c0.37		c0.07	0.22	c0.19
v/s Ratio Perm												0.30
v/c Ratio	1.68	0.76		0.75	1.51		0.86	1.33		1.76	0.74	0.93
Uniform Delay, d1	60.3	27.0		72.3	47.4		74.4	54.9		72.8	47.8	35.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	316.4	3.7		34.8	239.8		106.2	160.9		392.5	5.6	17.0
Delay (s)	376.7	30.7		107.2	287.2		180.6	215.8		465.3	53.4	52.3
Level of Service	F	C		F	F		F	F		F	D	D
Approach Delay (s)		183.8			277.8			214.6			90.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	179.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.53		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	132.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	352	525	448	251	186	372
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1566	1770	1544
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1566	1770	1544
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	391	583	498	279	207	413
RTOR Reduction (vph)	0	0	0	45	0	323
Lane Group Flow (vph)	391	583	498	234	207	90
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	12.4	26.3	9.9	19.4	9.5	9.5
Effective Green, g (s)	12.4	26.3	9.9	19.4	9.5	9.5
Actuated g/C Ratio	0.28	0.60	0.23	0.44	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	501	1119	800	837	384	335
v/s Ratio Prot	c0.22	c0.31	0.14	0.06	c0.12	
v/s Ratio Perm				0.09		0.06
v/c Ratio	0.78	0.52	0.62	0.28	0.54	0.27
Uniform Delay, d1	14.4	5.1	15.3	7.8	15.2	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.8	0.5	1.1	0.1	0.7	0.2
Delay (s)	22.2	5.5	16.4	7.8	15.9	14.4
Level of Service	C	A	B	A	B	B
Approach Delay (s)		12.2	13.3		14.9	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	55	11	262	109	142	11	994	33	66	942	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1816		1770	1704		1770	1854		1770	1844	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1816		1770	1704		1770	1854		1770	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	35	59	12	282	117	153	12	1069	35	71	1013	71
RTOR Reduction (vph)	0	5	0	0	33	0	0	1	0	0	1	0
Lane Group Flow (vph)	35	66	0	282	237	0	12	1103	0	71	1083	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.2	8.9		24.3	29.0		0.9	88.5		7.0	94.6	
Effective Green, g (s)	4.0	8.7		24.1	28.8		0.7	88.3		6.8	94.4	
Actuated g/C Ratio	0.03	0.06		0.17	0.20		0.00	0.61		0.05	0.66	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	49	110		296	341		9	1138		84	1210	
v/s Ratio Prot	0.02	0.04		c0.16	c0.14		0.01	c0.60		c0.04	0.59	
v/s Ratio Perm												
v/c Ratio	0.71	0.60		0.95	0.70		1.33	0.97		0.85	0.89	
Uniform Delay, d1	69.4	65.9		59.3	53.5		71.6	26.5		68.0	20.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	33.5	6.2		39.2	4.9		429.4	19.5		48.9	8.8	
Delay (s)	102.9	72.2		98.6	58.4		501.0	46.0		117.0	29.4	
Level of Service	F	E		F	E		F	D		F	C	
Approach Delay (s)		82.3			78.9			50.9			34.8	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	33	11	197	11	197	11	1060	66	98	843	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784		1770	1557		1770	3503		1770	3531	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1784		1770	1557		1770	3503		1770	3531	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	24	36	12	216	12	216	12	1165	73	108	926	12
RTOR Reduction (vph)	0	11	0	0	130	0	0	4	0	0	1	0
Lane Group Flow (vph)	24	37	0	216	98	0	12	1234	0	108	937	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.7	6.4		11.8	16.5		0.5	33.5		6.3	39.3	
Effective Green, g (s)	1.7	6.4		11.8	16.5		0.5	34.5		6.3	40.3	
Actuated g/C Ratio	0.02	0.09		0.16	0.22		0.01	0.46		0.08	0.54	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	40	152		278	343		12	1611		149	1897	
v/s Ratio Prot	0.01	0.02		c0.12	c0.06		0.01	c0.35		c0.06	0.27	
v/s Ratio Perm												
v/c Ratio	0.60	0.24		0.78	0.28		1.00	0.77		0.72	0.49	
Uniform Delay, d1	36.3	32.0		30.3	24.3		37.2	16.9		33.5	10.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.1	0.3		11.7	0.2		259.8	2.2		13.7	0.2	
Delay (s)	52.4	32.3		42.1	24.5		297.1	19.1		47.3	11.1	
Level of Service	D	C		D	C		F	B		D	B	
Approach Delay (s)		39.0			33.0			21.8			14.9	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1147	109	0	1128	0	393
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1349	128	0	1327	0	462
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1478		2013	1349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1478		2013	1349
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			452		51	141

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1349	128	664	664	462
Volume Left	0	0	0	0	0
Volume Right	0	128	0	0	462
cSH	1700	1700	1700	1700	141
Volume to Capacity	0.79	0.08	0.39	0.39	3.29
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	1415.1		
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1012	319	809	809	590	951
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1563	3433	2723	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1563	3433	2723	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1077	339	861	861	628	1012
RTOR Reduction (vph)	0	239	0	565	0	3
Lane Group Flow (vph)	1077	100	861	296	628	1009
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.5	23.5	26.0	26.0	16.5	46.5
Effective Green, g (s)	24.0	23.5	27.5	27.5	16.5	48.0
Actuated g/C Ratio	0.30	0.29	0.34	0.34	0.21	0.60
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1030	459	1180	936	708	950
v/s Ratio Prot	c0.31		0.25		0.18	c0.64
v/s Ratio Perm		0.06		0.11		
v/c Ratio	1.05	0.22	0.73	0.32	0.89	1.06
Uniform Delay, d1	28.0	21.3	23.0	19.3	30.8	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.7	0.1	2.3	0.2	12.5	47.1
Delay (s)	68.7	21.4	25.3	19.5	43.4	63.1
Level of Service	E	C	C	B	D	E
Approach Delay (s)	57.4		22.4		55.5	
Approach LOS	E		C		E	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1094	197	72	175	153	131	87	907	142	109	415	863
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1216	219	80	194	170	146	97	1008	158	121	461	959
RTOR Reduction (vph)	0	0	46	0	0	63	0	0	77	0	0	0
Lane Group Flow (vph)	1216	219	34	194	170	83	97	1008	81	121	461	959
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	46.8	52.3	52.3	11.0	16.5	16.5	7.2	37.5	37.5	5.1	34.9	125.9
Effective Green, g (s)	47.3	53.8	53.8	11.5	18.0	18.0	7.7	39.0	39.0	5.6	36.9	125.9
Actuated g/C Ratio	0.38	0.43	0.43	0.09	0.14	0.14	0.06	0.31	0.31	0.04	0.29	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1290	1512	676	314	506	226	210	1096	863	153	1037	1583
v/s Ratio Prot	c0.35	0.06		0.06	0.05		0.03	c0.28		0.04	0.13	
v/s Ratio Perm			0.02			0.05			0.03			c0.61
v/c Ratio	0.94	0.14	0.05	0.62	0.34	0.37	0.46	0.92	0.09	0.79	0.44	0.61
Uniform Delay, d1	38.0	22.0	21.1	55.1	48.6	48.8	57.1	41.9	30.9	59.6	36.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.4	0.1	0.0	2.5	0.7	1.7	0.6	12.5	0.1	22.3	0.4	1.7
Delay (s)	51.4	22.1	21.1	57.6	49.3	50.5	57.7	54.4	31.0	81.9	36.6	1.7
Level of Service	D	C	C	E	D	D	E	D	C	F	D	A
Approach Delay (s)		45.6			52.8			51.7			18.4	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	2055	66	76	1322	11	55	11	76	11	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3535		1681	1712	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	2119	68	78	1363	11	57	11	78	11	11	11
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	72	0	11	0
Lane Group Flow (vph)	11	2119	55	78	1374	0	34	34	6	0	22	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	0.6	75.6	75.6	7.1	82.1		8.5	8.5	8.5		2.7	
Effective Green, g (s)	0.2	77.3	75.6	6.7	83.8		8.3	8.3	8.3		2.5	
Actuated g/C Ratio	0.00	0.70	0.68	0.06	0.76		0.07	0.07	0.07		0.02	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	3	2469	1080	107	2674		126	128	119		39	
v/s Ratio Prot	0.01	c0.60		c0.04	0.39		c0.02	0.02			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	3.67	0.86	0.05	0.73	0.51		0.27	0.27	0.05		0.57	
Uniform Delay, d1	55.3	12.6	5.8	51.2	5.4		48.4	48.4	47.6		53.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	1761.9	3.2	0.0	19.5	0.2		1.2	1.2	0.2		18.8	
Delay (s)	1817.2	15.8	5.8	70.7	5.6		49.6	49.5	47.8		72.5	
Level of Service	F	B	A	E	A		D	D	D		E	
Approach Delay (s)		24.6			9.1			48.6			72.5	
Approach LOS		C			A			D			E	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2016 BUILD AM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	197	748	135	443	123	1329	382	50	98	666	517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1554	1770	3539	1554	1610	3286	1548	1770	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1554	1770	3539	1554	1610	3286	1548	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	219	219	831	150	492	137	1477	424	56	109	740	574
RTOR Reduction (vph)	0	0	487	0	0	111	0	0	35	0	0	120
Lane Group Flow (vph)	219	219	344	150	492	26	738	1163	21	109	740	454
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	15.0	29.3	29.3	11.0	26.1	26.1	53.7	53.7	53.7	31.7	31.7	31.7
Effective Green, g (s)	14.0	31.0	31.0	10.0	27.0	27.0	55.0	55.0	55.0	33.0	33.0	33.0
Actuated g/C Ratio	0.10	0.21	0.21	0.07	0.19	0.19	0.38	0.38	0.38	0.23	0.23	0.23
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	171	757	332	122	659	289	611	1246	587	403	805	356
v/s Ratio Prot	c0.12	0.06		0.08	0.14		c0.46	0.35		0.06	0.21	
v/s Ratio Perm			c0.22			0.02			0.01			c0.29
v/c Ratio	1.28	0.29	1.04	1.23	0.75	0.09	1.21	1.16dl	0.04	0.27	0.92	1.28
Uniform Delay, d1	65.5	47.8	57.0	67.5	55.8	48.8	45.0	43.2	28.3	46.1	54.7	56.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	163.4	0.1	59.4	155.7	4.0	0.0	108.3	12.5	0.0	0.1	15.1	144.3
Delay (s)	228.9	47.8	116.4	223.2	59.8	48.9	153.3	55.7	28.3	46.2	69.8	200.3
Level of Service	F	D	F	F	E	D	F	E	C	D	E	F
Approach Delay (s)		124.0			89.3			91.7			120.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	106.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	0	149	0	0	0	185	1514	0	0	1500	148
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
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	219	0	166	0	0	0	206	1682	0	0	1667	164
RTOR Reduction (vph)	0	0	127	0	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	219	39	0	0	0	206	1682	0	0	1667	143
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		19.0	19.0				14.0	121.5			103.5	103.5
Effective Green, g (s)		19.0	19.0				14.0	123.0			105.0	105.0
Actuated g/C Ratio		0.13	0.13				0.09	0.82			0.70	0.70
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		179	196				165	1528			1304	1086
v/s Ratio Prot							c0.12	0.90			c0.89	
v/s Ratio Perm		c0.16	0.03									0.09
v/c Ratio		1.22	0.20				1.25	1.10			1.28	0.13
Uniform Delay, d1		65.5	58.7				68.0	13.5			22.5	7.4
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		140.1	0.5				152.1	55.8			131.3	0.0
Delay (s)		205.6	59.2				220.1	69.3			153.8	7.5
Level of Service		F	E				F	E			F	A
Approach Delay (s)		142.5			0.0			85.8			140.7	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	115.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.1%	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)	25	12	529	12	12	12	430	1612	12	12	1601	37
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	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1802	1545		1735		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1802	1545		1735		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	13	563	13	13	13	457	1715	13	13	1703	39
RTOR Reduction (vph)	0	0	374	0	13	0	0	0	3	0	0	9
Lane Group Flow (vph)	0	40	189	0	26	0	457	1715	10	13	1703	30
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		19.4	19.4		5.5		36.1	97.0	97.0	4.6	65.5	65.5
Effective Green, g (s)		18.8	18.8		4.9		35.1	98.7	97.0	3.6	67.2	67.2
Actuated g/C Ratio		0.13	0.13		0.03		0.25	0.70	0.68	0.03	0.47	0.47
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		239	205		60		438	2460	1058	45	1675	749
v/s Ratio Prot		0.02			c0.02		c0.26	0.48		0.01	c0.48	
v/s Ratio Perm			c0.12						0.01			0.02
v/c Ratio		0.17	0.92		0.44		1.04	0.70	0.01	0.29	1.02	0.04
Uniform Delay, d1		54.7	60.9		67.2		53.4	12.8	7.2	67.9	37.4	20.1
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.1	41.0		1.9		54.8	0.7	0.0	1.3	26.3	0.0
Delay (s)		54.8	101.9		69.1		108.2	13.5	7.2	69.2	63.7	20.1
Level of Service		D	F		E		F	B	A	E	E	C
Approach Delay (s)		98.8			69.1			33.3			62.7	
Approach LOS		F			E			C			E	

Intersection Summary			
HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	123	0	0	0	25	2018	0	0	2043	74
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6374	
Flt Permitted			1.00				0.06	1.00			1.00	
Satd. Flow (perm)			2787				118	3539			6374	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	145	0	0	0	29	2374	0	0	2404	87
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	130	0	0	0	29	2374	0	0	2487	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			9.0				63.0	63.0			63.0	
Effective Green, g (s)			9.0				63.0	63.0			63.0	
Actuated g/C Ratio			0.11				0.79	0.79			0.79	
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)			314				93	2787			5020	
v/s Ratio Prot								c0.67			0.39	
v/s Ratio Perm			c0.05				0.25					
v/c Ratio			0.41				0.31	0.85			0.50	
Uniform Delay, d1			33.0				2.4	5.5			3.0	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				8.5	3.5			0.4	
Delay (s)			33.9				10.9	9.0			3.3	
Level of Service			C				B	A			A	
Approach Delay (s)		33.9			0.0			9.0			3.3	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	25	37	197	25	1157	25	849	380	997	1083	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.91		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1697		1610	2754	1441	1770	3539	1583	3433	3527	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1697		1610	2754	1441	1770	3539	1583	3433	3527	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	28	41	219	28	1286	28	943	422	1108	1203	28
RTOR Reduction (vph)	0	38	0	0	559	559	0	0	316	0	1	0
Lane Group Flow (vph)	41	31	0	197	134	84	28	943	106	1108	1230	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	8.4	8.4		11.0	11.0	11.0	3.3	27.7	27.7	45.4	69.8	
Effective Green, g (s)	8.4	8.4		11.0	11.0	11.0	3.3	29.2	27.7	45.4	71.3	
Actuated g/C Ratio	0.08	0.08		0.10	0.10	0.10	0.03	0.27	0.25	0.41	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	135	130		161	275	144	53	939	399	1417	2286	
v/s Ratio Prot	c0.02	0.02		c0.12	0.05		0.02	c0.27		c0.32	0.35	
v/s Ratio Perm						0.06			0.07			
v/c Ratio	0.30	0.24		1.22	0.91dr	0.58	0.53	1.00	0.27	0.78	0.54	
Uniform Delay, d1	48.0	47.8		49.5	46.8	47.3	52.6	40.4	33.0	28.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3		143.5	0.5	3.9	4.3	30.4	1.6	2.7	0.9	
Delay (s)	48.5	48.1		193.0	47.3	51.2	56.9	70.8	34.6	30.7	11.4	
Level of Service	D	D		F	D	D	E	E	C	C	B	
Approach Delay (s)		48.3			67.7			59.6			20.5	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

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

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	12	972	50	12	12	234	1057	12	12	1206	135
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1644			1759		1770	3532		1770	3478	
Flt Permitted		0.99			0.40		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1644			727		1770	3532		1770	3478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	220	13	1023	53	13	13	246	1113	13	13	1269	142
RTOR Reduction (vph)	0	99	0	0	5	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	1157	0	0	74	0	246	1125	0	13	1406	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		74.3			74.3		14.3	60.8		1.1	47.6	
Effective Green, g (s)		76.0			76.0		15.0	63.0		1.8	49.8	
Actuated g/C Ratio		0.50			0.50		0.10	0.41		0.01	0.33	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		818			362		174	1456		21	1134	
v/s Ratio Prot		c0.70					c0.14	0.32		0.01	c0.40	
v/s Ratio Perm					0.10							
v/c Ratio		1.42			0.20		1.41	0.77		0.62	1.24	
Uniform Delay, d1		38.4			21.5		68.9	38.7		75.2	51.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		194.0			0.3		216.6	2.7		32.5	115.4	
Delay (s)		232.4			21.8		285.5	41.5		107.7	166.9	
Level of Service		F			C		F	D		F	F	
Approach Delay (s)		232.4			21.8			85.2			166.4	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	156.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	152.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	947	1021	25	911	579	369	410	12	357	1858	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	294	1052	1134	28	1012	643	410	456	13	397	2064	219
RTOR Reduction (vph)	0	0	101	0	0	334	0	0	9	0	0	55
Lane Group Flow (vph)	294	1052	1033	28	1012	309	410	456	4	397	2064	164
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	21.3	57.5	57.5	2.0	38.2	38.2	9.5	37.8	37.8	28.7	57.0	57.0
Effective Green, g (s)	21.8	58.0	58.0	2.5	38.7	38.7	10.0	39.3	39.3	29.2	58.5	58.5
Actuated g/C Ratio	0.15	0.40	0.40	0.02	0.27	0.27	0.07	0.27	0.27	0.20	0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	266	1416	633	31	945	422	237	959	429	356	1428	639
v/s Ratio Prot	c0.17	0.30		0.02	0.29		c0.12	0.13		0.22	c0.58	
v/s Ratio Perm			c0.65			0.19			0.00			0.10
v/c Ratio	1.11	0.74	1.63	0.90	1.07	0.73	1.73	0.48	0.01	1.12	1.45	0.26
Uniform Delay, d1	61.6	37.1	43.5	71.1	53.2	48.4	67.5	44.2	38.6	57.9	43.2	28.8
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	86.3	1.9	291.2	119.0	50.2	5.6	345.6	1.7	0.0	82.6	204.4	1.0
Delay (s)	147.9	39.0	334.7	190.2	103.3	54.0	413.1	45.9	38.6	140.5	247.7	29.8
Level of Service	F	D	F	F	F	D	F	D	D	F	F	C
Approach Delay (s)		187.2			85.9			217.1			214.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	177.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	127.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	25	25	247	0	197	12	582	247	135	2782	12
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	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1834	1529	1681	1681	1561	1770	4858		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1834	1529	1681	1681	1561	1770	4858		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	28	28	274	0	219	13	647	274	150	3091	13
RTOR Reduction (vph)	0	0	27	0	0	126	0	40	0	0	0	2
Lane Group Flow (vph)	0	41	1	137	137	93	13	881	0	150	3091	11
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	18.0	18.0	18.0	1.7	93.3		16.2	107.8	107.8
Effective Green, g (s)		3.0	3.0	18.5	18.5	18.5	2.2	95.8		16.7	110.3	110.3
Actuated g/C Ratio		0.02	0.02	0.12	0.12	0.12	0.01	0.64		0.11	0.74	0.74
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	207	207	193	26	3103		197	2602	1140
v/s Ratio Prot		c0.02		c0.08	0.08		0.01	0.18		c0.08	c0.87	
v/s Ratio Perm			0.00			0.06						0.01
v/c Ratio		1.11	0.02	0.66	0.66	0.48	0.50	0.28		0.76	1.19	0.01
Uniform Delay, d1		73.5	72.1	62.8	62.8	61.3	73.4	12.0		64.7	19.9	5.3
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		182.0	0.1	6.0	6.0	0.7	5.4	0.2		14.4	88.7	0.0
Delay (s)		255.5	72.1	68.8	68.8	62.0	78.8	12.2		79.1	108.6	5.3
Level of Service		F	E	E	E	E	E	B		E	F	A
Approach Delay (s)		181.1			65.8			13.1			106.8	
Approach LOS		F			E			B			F	

Intersection Summary			
HCM Average Control Delay	85.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	12	12	1501	12	12	1304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3535		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3535		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	13	1668	13	13	1449
RTOR Reduction (vph)	12	0	0	0	0	0
Lane Group Flow (vph)	14	0	1681	0	13	1449
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.3		84.5		7.2	95.7
Effective Green, g (s)	6.3		84.5		7.2	95.7
Actuated g/C Ratio	0.06		0.77		0.07	0.87
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	97		2716		116	1621
v/s Ratio Prot	c0.01		0.48		0.01	c0.78
v/s Ratio Perm						
v/c Ratio	0.14		0.62		0.11	0.89
Uniform Delay, d1	49.3		5.6		48.4	4.2
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		1.1		0.3	8.0
Delay (s)	50.0		6.7		48.7	12.2
Level of Service	D		A		D	B
Approach Delay (s)	50.0		6.7			12.5
Approach LOS	D		A			B

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	37	12	0	1476	1219	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3356			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3356			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	13	0	1640	1354	109
RTOR Reduction (vph)	12	0	0	0	0	18
Lane Group Flow (vph)	42	0	0	1640	1354	91
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	7.2			74.8	74.8	74.8
Effective Green, g (s)	7.2			74.8	74.8	74.8
Actuated g/C Ratio	0.08			0.83	0.83	0.83
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	268			2941	1548	1316
v/s Ratio Prot	c0.01			0.46	c0.73	
v/s Ratio Perm						0.06
v/c Ratio	0.16			0.56	0.87	0.07
Uniform Delay, d1	38.6			2.4	4.7	1.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.8	7.2	0.1
Delay (s)	38.8			3.2	11.9	1.5
Level of Service	D			A	B	A
Approach Delay (s)	38.8			3.2	11.1	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	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)	12	1206	12	12	1452	12	12	25	12	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.95		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.97			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1471		3096			1768			1741	
Flt Permitted		0.98	1.00		0.94			0.92			0.93	
Satd. Flow (perm)		1771	1471		2911			1645			1638	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	1340	13	13	1613	13	13	28	13	13	13	13
RTOR Reduction (vph)	0	0	2	0	0	0	0	12	0	0	12	0
Lane Group Flow (vph)	0	1353	11	0	1639	0	0	42	0	0	27	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		93.5	93.5		93.5			8.5			8.5	
Effective Green, g (s)		93.5	93.5		93.5			8.5			8.5	
Actuated g/C Ratio		0.85	0.85		0.85			0.08			0.08	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1505	1250		2474			127			127	
v/s Ratio Prot												
v/s Ratio Perm		c0.76	0.01		0.56			c0.03			0.02	
v/c Ratio		0.90	0.01		0.66			0.33			0.21	
Uniform Delay, d1		5.2	1.2		2.8			48.1			47.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		8.9	0.0		1.4			0.6			0.3	
Delay (s)		14.1	1.3		4.2			48.6			47.9	
Level of Service		B	A		A			D			D	
Approach Delay (s)		14.0			4.2			48.6			47.9	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	394	824	12	25	467	27	25	455	98	62	407	984
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1859		1770	1552		1770	1813		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1859		1770	1552		1770	1813		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	438	916	13	28	519	30	28	506	109	69	452	1093
RTOR Reduction (vph)	0	0	0	0	1	0	0	5	0	0	0	44
Lane Group Flow (vph)	438	929	0	28	548	0	28	610	0	69	452	1049
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	36.0	74.4		2.4	40.8		2.4	44.8		4.0	46.4	82.4
Effective Green, g (s)	36.0	74.4		2.4	40.8		2.4	44.8		4.0	46.4	82.4
Actuated g/C Ratio	0.25	0.53		0.02	0.29		0.02	0.32		0.03	0.33	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	450	977		30	447		30	574		50	610	966
v/s Ratio Prot	0.25	0.50		0.02	c0.35		0.02	0.34		c0.04	0.24	c0.28
v/s Ratio Perm												0.39
v/c Ratio	0.97	0.95		0.93	1.23		0.93	1.06		1.38	0.74	1.09
Uniform Delay, d1	52.3	31.9		69.5	50.4		69.5	48.4		68.8	42.3	29.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	35.2	18.1		134.2	119.8		134.2	55.1		257.7	5.2	55.2
Delay (s)	87.5	50.0		203.7	170.2		203.7	103.5		326.5	47.5	84.8
Level of Service	F	D		F	F		F	F		F	D	F
Approach Delay (s)		62.0			171.8			107.8			84.7	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	92.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	141.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	480	492	222	172	369	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1571	1770	1545
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1571	1770	1545
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	533	547	247	191	410	330
RTOR Reduction (vph)	0	0	0	66	0	237
Lane Group Flow (vph)	533	547	247	125	410	93
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	21.5	34.1	8.6	25.0	16.4	16.4
Effective Green, g (s)	21.5	34.1	8.6	25.0	16.4	16.4
Actuated g/C Ratio	0.37	0.58	0.15	0.43	0.28	0.28
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	651	1086	520	779	496	433
v/s Ratio Prot	c0.30	c0.29	0.07	0.04	c0.23	
v/s Ratio Perm				0.03		0.06
v/c Ratio	0.82	0.50	0.48	0.16	0.83	0.21
Uniform Delay, d1	16.7	7.2	22.9	10.3	19.7	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0	0.4	0.3	0.0	10.3	0.1
Delay (s)	24.7	7.6	23.1	10.3	30.0	16.2
Level of Service	C	A	C	B	C	B
Approach Delay (s)		16.0	17.5		23.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	62	12	110	37	62	12	802	50	62	1354	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1688		1770	1846		1770	1858	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1817		1770	1688		1770	1846		1770	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	67	13	118	40	67	13	862	54	67	1456	27
RTOR Reduction (vph)	0	5	0	0	41	0	0	1	0	0	0	0
Lane Group Flow (vph)	27	75	0	118	66	0	13	915	0	67	1483	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.6	12.1		10.4	18.9		0.9	98.6		7.3	105.0	
Effective Green, g (s)	3.4	11.9		10.2	18.7		0.7	98.4		7.1	104.8	
Actuated g/C Ratio	0.02	0.08		0.07	0.13		0.00	0.69		0.05	0.73	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	42	151		126	220		9	1265		88	1356	
v/s Ratio Prot	0.02	c0.04		c0.07	0.04		0.01	0.50		c0.04	c0.80	
v/s Ratio Perm												
v/c Ratio	0.64	0.50		0.94	0.30		1.44	0.72		0.76	1.09	
Uniform Delay, d1	69.5	63.0		66.4	56.5		71.4	14.1		67.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	22.5	0.9		59.6	0.3		474.2	2.1		28.8	54.1	
Delay (s)	92.0	63.9		126.0	56.8		545.6	16.2		96.2	73.5	
Level of Service	F	E		F	E		F	B		F	E	
Approach Delay (s)		71.0			93.1			23.6			74.5	
Approach LOS		E			F			C			E	

Intersection Summary			
HCM Average Control Delay	59.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	143.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	12	12	98	12	123	12	864	37	110	1329	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1704		1770	1567		1770	3514		1770	3534	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1704		1770	1567		1770	3514		1770	3534	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	13	13	13	108	13	135	13	949	41	121	1460	13
RTOR Reduction (vph)	0	12	0	0	112	0	0	3	0	0	0	0
Lane Group Flow (vph)	13	14	0	108	36	0	13	987	0	121	1473	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.4	4.5		7.0	11.1		0.7	29.7		6.7	35.7	
Effective Green, g (s)	0.4	4.5		7.0	11.1		0.7	30.7		6.7	36.7	
Actuated g/C Ratio	0.01	0.07		0.11	0.17		0.01	0.47		0.10	0.57	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	11	118		191	268		19	1662		183	1998	
v/s Ratio Prot	0.01	0.01		c0.06	c0.02		0.01	0.28		c0.07	c0.42	
v/s Ratio Perm												
v/c Ratio	1.18	0.12		0.57	0.13		0.68	0.59		0.66	0.74	
Uniform Delay, d1	32.2	28.3		27.5	22.8		32.0	12.5		28.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	338.7	0.2		2.3	0.1		58.7	0.6		6.8	1.5	
Delay (s)	371.0	28.5		29.8	22.9		90.7	13.1		34.8	12.0	
Level of Service	F	C		C	C		F	B		C	B	
Approach Delay (s)		142.7			25.8			14.1			13.7	
Approach LOS		F			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
16: Natoma St & Briggs Ranch Dr.

3/2/2010

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	826	123	0	1588	0	247
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	972	145	0	1868	0	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1116		1906	972
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1116		1906	972
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			621		60	252

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	972	145	934	934	291
Volume Left	0	0	0	0	0
Volume Right	0	145	0	0	291
cSH	1700	1700	1700	1700	252
Volume to Capacity	0.57	0.09	0.55	0.55	1.15
Queue Length 95th (ft)	0	0	0	0	328
Control Delay (s)	0.0	0.0	0.0	0.0	146.1
Lane LOS					F
Approach Delay (s)	0.0		0.0		146.1
Approach LOS					F

Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1009	345	1243	966	421	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1562	3433	2724	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1562	3433	2724	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1073	367	1322	1028	448	694
RTOR Reduction (vph)	0	195	0	607	0	5
Lane Group Flow (vph)	1073	172	1322	421	448	689
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.6	28.6	35.4	35.4	12.0	51.4
Effective Green, g (s)	29.1	28.6	36.9	36.9	12.0	52.9
Actuated g/C Ratio	0.32	0.32	0.41	0.41	0.13	0.59
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1110	496	1408	1117	458	930
v/s Ratio Prot	c0.31		c0.39		c0.13	0.44
v/s Ratio Perm		0.11		0.15		
v/c Ratio	0.97	0.35	0.94	0.38	0.98	0.74
Uniform Delay, d1	30.0	23.5	25.5	18.5	38.9	13.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.2	0.2	12.1	0.2	35.8	3.2
Delay (s)	49.1	23.7	37.6	18.7	74.7	16.8
Level of Service	D	C	D	B	E	B
Approach Delay (s)	42.6		29.3		39.5	
Approach LOS	D		C		D	

Intersection Summary			
HCM Average Control Delay	35.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	988	135	62	197	270	74	116	234	160	123	997	1257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1098	150	69	219	300	82	129	260	178	137	1108	1397
RTOR Reduction (vph)	0	0	41	0	0	68	0	0	124	0	0	0
Lane Group Flow (vph)	1098	150	28	219	300	14	129	260	54	137	1108	1397
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	42.7	50.4	50.4	12.1	19.8	19.8	5.1	37.8	37.8	8.9	41.1	129.2
Effective Green, g (s)	43.2	51.9	51.9	12.6	21.3	21.3	5.6	39.3	39.3	9.4	43.1	129.2
Actuated g/C Ratio	0.33	0.40	0.40	0.10	0.16	0.16	0.04	0.30	0.30	0.07	0.33	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1148	1422	636	335	583	261	149	1076	848	250	1181	1583
v/s Ratio Prot	c0.32	0.04		0.06	0.08		0.04	0.07		0.04	c0.31	
v/s Ratio Perm			0.02			0.01			0.02			c0.88
v/c Ratio	0.96	0.11	0.04	0.65	0.51	0.05	0.87	0.24	0.06	0.55	0.94	0.88
Uniform Delay, d1	42.1	24.1	23.5	56.2	49.2	45.4	61.4	33.8	31.9	57.8	41.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.8	0.0	0.0	3.5	1.3	0.1	36.4	0.2	0.1	1.3	13.9	7.5
Delay (s)	58.9	24.2	23.6	59.7	50.5	45.6	97.8	34.0	32.0	59.2	55.7	7.5
Level of Service	E	C	C	E	D	D	F	C	C	E	E	A
Approach Delay (s)		53.1			53.2			47.9			30.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	129.2	Sum of lost time (s)	0.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1096	86	37	2266	12	98	12	62	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3537		1681	1703	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3537		1681	1703	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	12	1130	89	38	2336	12	101	12	64	12	12	12
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	58	0	12	0
Lane Group Flow (vph)	12	1130	64	38	2348	0	57	56	6	0	24	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	1.5	90.0	90.0	4.3	92.8		11.3	11.3	11.3		3.0	
Effective Green, g (s)	1.1	91.7	90.0	3.9	94.5		11.1	11.1	11.1		2.8	
Actuated g/C Ratio	0.01	0.73	0.72	0.03	0.75		0.09	0.09	0.09		0.02	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	16	2586	1135	55	2663		149	151	140		39	
v/s Ratio Prot	0.01	0.32		c0.02	c0.66		c0.03	0.03			c0.01	
v/s Ratio Perm			0.04						0.00			
v/c Ratio	0.75	0.44	0.06	0.69	0.88		0.38	0.37	0.04		0.62	
Uniform Delay, d1	62.1	6.7	5.2	60.2	11.4		54.0	53.9	52.3		60.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	99.6	0.1	0.0	27.3	3.8		1.7	1.6	0.1		27.3	
Delay (s)	161.6	6.8	5.3	87.5	15.2		55.7	55.5	52.5		88.1	
Level of Service	F	A	A	F	B		E	E	D		F	
Approach Delay (s)		8.2			16.4			54.5			88.1	
Approach LOS		A			B			D			F	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION SYNCHRO ANALYSIS

YR-2016 BUILD PM PEAK

HCM Signalized Intersection Capacity Analysis
1: Douglas Blvd & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	492	1119	148	382	98	1006	617	123	197	542	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	3539	1555	1610	3318	1548	1770	3539	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	3539	1555	1610	3318	1548	1770	3539	1562
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	533	547	1243	164	424	109	1118	686	137	219	602	383
RTOR Reduction (vph)	0	0	376	0	0	83	0	0	98	0	0	270
Lane Group Flow (vph)	533	547	867	164	424	26	593	1211	39	219	602	113
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			6			2			1			1
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	31.0	54.0	54.0	10.0	33.8	33.8	39.7	39.7	39.7	22.0	22.0	22.0
Effective Green, g (s)	30.0	55.7	55.7	9.0	34.7	34.7	41.0	41.0	41.0	23.3	23.3	23.3
Actuated g/C Ratio	0.21	0.38	0.38	0.06	0.24	0.24	0.28	0.28	0.28	0.16	0.16	0.16
Clearance Time (s)	3.0	5.7	5.7	3.0	4.9	4.9	5.3	5.3	5.3	5.3	5.3	5.3
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	366	1359	599	110	847	372	455	938	438	284	569	251
v/s Ratio Prot	c0.30	0.15		0.09	0.12		c0.37	0.36		0.12	c0.17	
v/s Ratio Perm			c0.56			0.02			0.03			0.07
v/c Ratio	1.46	0.40	1.45	1.49	0.50	0.07	1.30	1.29	0.09	0.77	1.06	0.45
Uniform Delay, d1	57.5	32.5	44.6	68.0	47.7	42.7	52.0	52.0	38.3	58.3	60.8	55.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	220.0	0.1	210.9	262.7	0.2	0.0	151.8	139.0	0.0	11.2	54.0	0.5
Delay (s)	277.5	32.6	255.5	330.7	47.8	42.7	203.8	191.0	38.3	69.5	114.8	55.5
Level of Service	F	C	F	F	D	D	F	F	D	E	F	E
Approach Delay (s)		208.1			113.6			184.1			87.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	166.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.0
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	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	0	247	0	0	0	161	1685	0	0	1489	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00				1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.98				1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1547				1770	1863			1863	1551
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1547				1770	1863			1863	1551
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	137	0	274	0	0	0	179	1872	0	0	1654	137
RTOR Reduction (vph)	0	0	115	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	137	159	0	0	0	179	1872	0	0	1654	120
Confl. Bikes (#/hr)			1			1						1
Turn Type	Perm		Perm	Perm			Prot			Prot		Perm
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								6
Actuated Green, G (s)		17.6	17.6				12.0	121.5			105.5	105.5
Effective Green, g (s)		17.6	17.6				12.0	123.0			107.0	107.0
Actuated g/C Ratio		0.12	0.12				0.08	0.83			0.72	0.72
Clearance Time (s)		4.0	4.0				4.0	5.5			5.5	5.5
Vehicle Extension (s)		3.0	3.0				1.0	2.5			2.5	2.5
Lane Grp Cap (vph)		167	183				143	1542			1341	1117
v/s Ratio Prot							0.10	c1.00			0.89	
v/s Ratio Perm		0.10	c0.10									0.08
v/c Ratio		0.82	0.87				1.25	1.21			1.23	0.11
Uniform Delay, d1		64.0	64.4				68.3	12.8			20.8	6.3
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		26.4	33.4				158.1	102.5			111.7	0.0
Delay (s)		90.4	97.8				226.4	115.3			132.5	6.3
Level of Service		F	F				F	F			F	A
Approach Delay (s)		95.3			0.0			125.0			122.9	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	121.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	148.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Oak Hill Dr & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	12	430	25	12	25	542	1723	12	12	1551	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	5.7	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1802	1535		1710		1770	3539	1549	1770	3539	1583
Flt Permitted		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1802	1535		1710		1770	3539	1549	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	13	457	27	13	27	577	1833	13	13	1650	27
RTOR Reduction (vph)	0	0	431	0	17	0	0	0	2	0	0	6
Lane Group Flow (vph)	0	40	26	0	50	0	577	1833	11	13	1650	21
Confl. Peds. (#/hr)			3			2						
Confl. Bikes (#/hr)			3			1			3			
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)		8.4	8.4		6.4		43.2	100.5	100.5	4.5	61.8	61.8
Effective Green, g (s)		7.8	7.8		5.8		42.2	102.2	100.5	3.5	63.5	63.5
Actuated g/C Ratio		0.06	0.06		0.04		0.31	0.76	0.74	0.03	0.47	0.47
Clearance Time (s)		3.4	3.4		3.4		3.0	5.7	5.7	3.0	5.7	5.7
Vehicle Extension (s)		1.0	1.0		0.5		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)		104	88		73		552	2673	1151	46	1661	743
v/s Ratio Prot		c0.02			c0.03		c0.33	0.52		0.01	c0.47	
v/s Ratio Perm			0.02						0.01			0.01
v/c Ratio		0.38	0.30		0.68		1.05	0.69	0.01	0.28	0.99	0.03
Uniform Delay, d1		61.4	61.1		63.8		46.6	8.4	4.5	64.7	35.7	19.3
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.7		18.9		50.7	0.6	0.0	1.2	20.4	0.0
Delay (s)		62.3	61.8		82.7		97.2	9.0	4.5	65.9	56.1	19.3
Level of Service		E	E		F		F	A	A	E	E	B
Approach Delay (s)		61.9			82.7			30.0			55.6	
Approach LOS		E			F			C			E	

Intersection Summary			
HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: Exist. Folsom Dam Rd & Folsom-Auburn Rd

3/2/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	135	0	0	0	74	2178	0	0	1908	74
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			0.88				1.00	0.95			0.86	
Frt			0.85				1.00	1.00			0.99	
Flt Protected			1.00				0.95	1.00			1.00	
Satd. Flow (prot)			2787				1770	3539			6372	
Flt Permitted			1.00				0.06	1.00			1.00	
Satd. Flow (perm)			2787				119	3539			6372	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	159	0	0	0	87	2562	0	0	2245	87
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	138	0	0	0	87	2562	0	0	2327	0
Turn Type			custom	Perm			Perm		Perm			
Protected Phases					8			2			6	
Permitted Phases			4	8			2		2			
Actuated Green, G (s)			9.2				62.8	62.8			62.8	
Effective Green, g (s)			9.2				62.8	62.8			62.8	
Actuated g/C Ratio			0.12				0.78	0.78			0.78	
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)			321				93	2778			5002	
v/s Ratio Prot								0.72			0.37	
v/s Ratio Perm			c0.05				c0.73					
v/c Ratio			0.43				0.94	0.92			0.47	
Uniform Delay, d1			33.0				7.0	6.7			2.9	
Progression Factor			1.00				1.00	1.00			1.00	
Incremental Delay, d2			0.9				76.9	6.5			0.3	
Delay (s)			33.9				83.9	13.2			3.2	
Level of Service			C				F	B			A	
Approach Delay (s)		33.9			0.0			15.5			3.2	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	25	50	478	25	1121	37	1071	283	1181	751	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	4.0	4.0	4.0	4.0	5.5	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.86	0.91	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.90		1.00	0.88	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1676		1610	2791	1441	1770	3539	1583	3433	3506	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1676		1610	2791	1441	1770	3539	1583	3433	3506	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	28	56	531	28	1246	41	1190	314	1312	834	56
RTOR Reduction (vph)	0	52	0	0	441	441	0	0	229	0	2	0
Lane Group Flow (vph)	69	32	0	419	322	182	41	1190	85	1312	888	0
Turn Type	Split			Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3			6			
Actuated Green, G (s)	11.4	11.4		28.0	28.0	28.0	6.0	40.5	40.5	52.6	87.1	
Effective Green, g (s)	11.4	11.4		28.0	28.0	28.0	6.0	42.0	40.5	52.6	88.6	
Actuated g/C Ratio	0.08	0.08		0.19	0.19	0.19	0.04	0.28	0.27	0.35	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	1.0	1.0		1.0	1.0	1.0	1.0	4.7	4.7	1.5	5.4	
Lane Grp Cap (vph)	135	127		301	521	269	71	991	427	1204	2071	
v/s Ratio Prot	c0.04	0.02		c0.26	0.12		0.02	c0.34		c0.38	0.25	
v/s Ratio Perm						0.13			0.05			
v/c Ratio	0.51	0.25		1.39	0.88dr	0.68	0.58	1.20	0.20	1.09	0.43	
Uniform Delay, d1	66.6	65.3		61.0	56.1	56.8	70.8	54.0	42.2	48.7	16.8	
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	1.4	0.4		195.6	1.5	5.2	6.9	100.2	1.0	54.0	0.7	
Delay (s)	68.0	65.7		256.6	57.6	62.0	77.6	154.2	43.3	102.7	17.5	
Level of Service	E	E		F	E	E	E	F	D	F	B	
Approach Delay (s)		66.7			105.3			129.6			68.2	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	96.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	12	689	37	25	12	935	1231	50	12	897	307
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	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			0.98		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648			1773		1770	3515		1770	3384	
Flt Permitted		0.99			0.49		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648			895		1770	3515		1770	3384	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	13	725	39	26	13	984	1296	53	13	944	323
RTOR Reduction (vph)	0	97	0	0	5	0	0	2	0	0	24	0
Lane Group Flow (vph)	0	822	0	0	73	0	984	1347	0	13	1243	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)						1						2
Turn Type	Split			Perm			Prot			Prot		
Protected Phases	4!	4			8!		5	2		1	6	
Permitted Phases				8								
Actuated Green, G (s)		46.3			46.3		45.3	78.1		1.8	34.6	
Effective Green, g (s)		48.0			48.0		46.0	80.3		2.5	36.8	
Actuated g/C Ratio		0.34			0.34		0.32	0.56		0.02	0.26	
Clearance Time (s)		5.7			5.7		4.7	6.2		4.7	6.2	
Vehicle Extension (s)		3.0			3.0		2.0	3.8		2.0	3.8	
Lane Grp Cap (vph)		554			301		570	1977		31	872	
v/s Ratio Prot		c0.50					c0.56	0.38		0.01	c0.37	
v/s Ratio Perm					0.08							
v/c Ratio		1.48			0.24		1.73	0.68		0.42	1.43	
Uniform Delay, d1		47.4			34.2		48.4	22.2		69.4	53.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		227.3			0.4		334.2	1.0		3.3	198.3	
Delay (s)		274.7			34.7		382.6	23.2		72.7	251.3	
Level of Service		F			C		F	C		E	F	
Approach Delay (s)		274.7			34.7			174.8			249.5	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	213.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	142.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	407	787	677	12	1083	923	1181	1231	12	579	767	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	452	874	752	13	1203	1026	1312	1368	13	643	852	418
RTOR Reduction (vph)	0	0	271	0	0	240	0	0	6	0	0	129
Lane Group Flow (vph)	452	874	481	13	1203	786	1312	1368	7	643	852	289
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.5	61.5	61.5	1.2	45.2	45.2	25.5	38.8	38.8	24.5	37.8	37.8
Effective Green, g (s)	18.0	62.0	62.0	1.7	45.7	45.7	26.0	40.3	40.3	25.0	39.3	39.3
Actuated g/C Ratio	0.12	0.43	0.43	0.01	0.32	0.32	0.18	0.28	0.28	0.17	0.27	0.27
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.1	5.1	2.0	5.1	5.1
Lane Grp Cap (vph)	220	1513	677	21	1115	499	616	984	440	305	959	429
v/s Ratio Prot	c0.26	0.25		0.01	0.34		c0.38	c0.39		c0.36	0.24	
v/s Ratio Perm			0.30			c0.50			0.00			0.18
v/c Ratio	2.05	0.58	0.71	0.62	1.08	1.57	2.13	1.39	0.02	2.11	0.89	0.67
Uniform Delay, d1	63.5	31.5	34.1	71.3	49.6	49.6	59.5	52.4	38.0	60.0	50.7	47.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	490.0	0.3	2.9	32.5	50.9	268.0	513.9	181.9	0.1	509.7	12.1	8.2
Delay (s)	553.5	31.9	37.0	103.9	100.6	317.7	573.4	234.3	38.0	569.7	62.8	55.3
Level of Service	F	C	D	F	F	F	F	F	D	F	E	E
Approach Delay (s)		147.2			199.9			398.5			231.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	254.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	25	12	185	25	517	25	1895	234	529	939	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1834	1529	1681	1704	1562	1770	5001		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1834	1529	1681	1704	1562	1770	5001		1770	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	28	13	206	28	574	28	2106	260	588	1043	28
RTOR Reduction (vph)	0	0	13	0	0	347	0	10	0	0	0	9
Lane Group Flow (vph)	0	41	0	115	119	227	28	2356	0	588	1043	19
Confl. Bikes (#/hr)			2			1						2
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		2.5	2.5	23.4	23.4	23.4	3.8	58.0		46.1	100.3	100.3
Effective Green, g (s)		3.0	3.0	23.9	23.9	23.9	4.3	60.5		46.6	102.8	102.8
Actuated g/C Ratio		0.02	0.02	0.16	0.16	0.16	0.03	0.40		0.31	0.69	0.69
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	4.6		2.0	5.1	5.1
Lane Grp Cap (vph)		37	31	268	272	249	51	2017		550	2425	1062
v/s Ratio Prot		c0.02		0.07	0.07		0.02	c0.47		c0.33	0.29	
v/s Ratio Perm			0.00			c0.15						0.01
v/c Ratio		1.11	0.01	0.43	0.44	0.91	0.55	1.17		1.07	0.43	0.02
Uniform Delay, d1		73.5	72.0	56.9	57.0	62.0	71.9	44.8		51.7	10.5	7.5
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		182.0	0.0	0.4	0.4	33.7	6.3	81.4		58.2	0.6	0.0
Delay (s)		255.5	72.1	57.3	57.4	95.7	78.2	126.1		109.9	11.1	7.6
Level of Service		F	E	E	E	F	E	F		F	B	A
Approach Delay (s)		211.3			84.6			125.6			46.0	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	92.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	25	25	1993	25	12	1366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1695		3533		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1695		3533		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	28	2214	28	13	1518
RTOR Reduction (vph)	26	0	0	0	0	0
Lane Group Flow (vph)	30	0	2242	0	13	1518
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	8.2		102.6		7.2	113.8
Effective Green, g (s)	8.2		102.6		7.2	113.8
Actuated g/C Ratio	0.06		0.79		0.06	0.88
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		2.8		2.4	2.8
Lane Grp Cap (vph)	107		2788		98	1631
v/s Ratio Prot	c0.02		0.63		0.01	c0.81
v/s Ratio Perm						
v/c Ratio	0.28		0.80		0.13	0.93
Uniform Delay, d1	58.1		7.9		58.4	5.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.4		2.6		0.4	11.0
Delay (s)	59.5		10.5		58.8	16.4
Level of Service	E		B		E	B
Approach Delay (s)	59.5		10.5			16.8
Approach LOS	E		B			B

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	234	25	0	1784	1304	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.97			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	0.96			1.00	1.00	1.00
Satd. Flow (prot)	3407			3539	1863	1583
Flt Permitted	0.96			1.00	1.00	1.00
Satd. Flow (perm)	3407			3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	28	0	1982	1449	96
RTOR Reduction (vph)	9	0	0	0	0	20
Lane Group Flow (vph)	279	0	0	1982	1449	76
Turn Type						Perm
Protected Phases	4			2	2	
Permitted Phases						2
Actuated Green, G (s)	13.2			78.8	78.8	78.8
Effective Green, g (s)	13.2			78.8	78.8	78.8
Actuated g/C Ratio	0.13			0.79	0.79	0.79
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	2.8			2.8	2.8	2.8
Lane Grp Cap (vph)	450			2789	1468	1247
v/s Ratio Prot	c0.08			0.56	c0.78	
v/s Ratio Perm						0.05
v/c Ratio	0.62			0.71	0.99	0.06
Uniform Delay, d1	41.0			5.1	10.1	2.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.5			1.6	20.6	0.1
Delay (s)	43.5			6.7	30.7	2.5
Level of Service	D			A	C	A
Approach Delay (s)	43.5			6.7	29.0	
Approach LOS	D			A	C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	1279	37	12	1698	25	37	123	62	50	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1710	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			0%			0%	
Total Lost time (s)		4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.95		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.96	
Flt Protected		1.00	1.00		1.00			0.99			0.98	
Satd. Flow (prot)		1815	1460		3093			1765			1742	
Flt Permitted		0.97	1.00		0.73			0.86			0.52	
Satd. Flow (perm)		1753	1460		2252			1535			925	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	1421	41	13	1887	28	41	137	69	56	56	56
RTOR Reduction (vph)	0	0	8	0	1	0	0	10	0	0	13	0
Lane Group Flow (vph)	0	1434	33	0	1927	0	0	237	0	0	155	0
Confl. Peds. (#/hr)			9			2						
Confl. Bikes (#/hr)						1			2			1
Parking (#/hr)				0	0	0						
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		110.0	110.0		110.0			22.0			22.0	
Effective Green, g (s)		110.0	110.0		110.0			22.0			22.0	
Actuated g/C Ratio		0.79	0.79		0.79			0.16			0.16	
Clearance Time (s)		4.0	4.0		4.0			4.0			4.0	
Vehicle Extension (s)		2.8	2.8		2.8			2.0			2.0	
Lane Grp Cap (vph)		1377	1147		1769			241			145	
v/s Ratio Prot												
v/s Ratio Perm		0.82	0.02		c0.86			0.15			c0.17	
v/c Ratio		1.04	0.03		1.09			0.98			1.07	
Uniform Delay, d1		15.0	3.3		15.0			58.8			59.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		35.8	0.0		50.2			52.7			95.1	
Delay (s)		50.8	3.3		65.2			111.5			154.1	
Level of Service		D	A		E			F			F	
Approach Delay (s)		49.4			65.2			111.5			154.1	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM Average Control Delay	66.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.0%	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)	615	751	25	50	886	12	25	542	135	125	419	824
Ideal Flow (vphpl)	1900	1900	1900	1900	1596	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1854		1770	1562		1770	1807		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	683	834	28	56	984	13	28	602	150	139	466	916
RTOR Reduction (vph)	0	1	0	0	1	0	0	6	0	0	0	19
Lane Group Flow (vph)	683	861	0	56	996	0	28	746	0	139	466	897
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases												6
Actuated Green, G (s)	30.0	81.2		5.6	56.8		2.4	41.8		7.0	46.4	76.4
Effective Green, g (s)	30.0	81.2		5.6	56.8		2.4	41.8		7.0	46.4	76.4
Actuated g/C Ratio	0.20	0.54		0.04	0.37		0.02	0.28		0.05	0.31	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	4.1		2.0	4.1		2.0	4.1		2.0	4.1	2.0
Lane Grp Cap (vph)	350	993		65	585		28	498		82	570	840
v/s Ratio Prot	c0.39	0.46		0.03	c0.64		0.02	c0.41		c0.08	0.25	0.21
v/s Ratio Perm												0.36
v/c Ratio	1.95	0.87		0.86	1.70		1.00	1.50		1.70	0.82	1.07
Uniform Delay, d1	60.8	30.5		72.6	47.4		74.6	54.9		72.3	48.7	37.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	438.4	8.4		63.7	323.7		170.1	234.7		359.4	9.4	50.9
Delay (s)	499.2	38.9		136.3	371.1		244.7	289.6		431.7	58.1	88.5
Level of Service	F	D		F	F		F	F		F	E	F
Approach Delay (s)		242.4			358.6			288.0			110.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	233.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	151.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	147.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	396	591	505	283	209	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	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	1863	3539	1565	1770	1543
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	3539	1565	1770	1543
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	440	657	561	314	232	466
RTOR Reduction (vph)	0	0	0	66	0	366
Lane Group Flow (vph)	440	657	561	248	232	100
Confl. Peds. (#/hr)				8		7
Confl. Bikes (#/hr)				8		8
Turn Type	Prot			pm+ov		Perm
Protected Phases	1	6	2	4	4	
Permitted Phases				2		4
Actuated Green, G (s)	16.9	32.4	11.5	22.5	11.0	11.0
Effective Green, g (s)	16.9	32.4	11.5	22.5	11.0	11.0
Actuated g/C Ratio	0.33	0.63	0.22	0.44	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.1	3.1	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	582	1174	792	807	379	330
v/s Ratio Prot	c0.25	0.35	c0.16	0.07	c0.13	
v/s Ratio Perm				0.09		0.06
v/c Ratio	0.76	0.56	0.71	0.31	0.61	0.30
Uniform Delay, d1	15.4	5.4	18.4	9.4	18.3	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.6	2.4	0.1	2.1	0.2
Delay (s)	21.0	6.0	20.8	9.5	20.3	17.2
Level of Service	C	A	C	A	C	B
Approach Delay (s)		12.0	16.7		18.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	62	12	295	123	160	12	1119	37	74	1061	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1705		1770	1854		1770	1844	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1817		1770	1705		1770	1854		1770	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	67	13	317	132	172	13	1203	40	80	1141	80
RTOR Reduction (vph)	0	5	0	0	32	0	0	1	0	0	1	0
Lane Group Flow (vph)	40	75	0	317	272	0	13	1242	0	80	1220	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.9	12.0		23.2	30.3		1.0	90.0		6.2	95.2	
Effective Green, g (s)	4.7	11.8		23.0	30.1		0.8	89.8		6.0	95.0	
Actuated g/C Ratio	0.03	0.08		0.16	0.21		0.01	0.61		0.04	0.65	
Clearance Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	57	146		278	350		10	1136		72	1195	
v/s Ratio Prot	0.02	0.04		c0.18	c0.16		0.01	c0.67		c0.05	0.66	
v/s Ratio Perm												
v/c Ratio	0.70	0.52		1.14	0.78		1.30	1.09		1.11	1.02	
Uniform Delay, d1	70.3	64.7		61.8	55.1		72.9	28.4		70.3	25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.2	1.3		97.3	9.5		398.9	56.0		139.6	31.3	
Delay (s)	97.4	65.9		159.1	64.6		471.8	84.4		209.9	57.1	
Level of Service	F	E		F	E		F	F		F	E	
Approach Delay (s)		76.4			112.8			88.4			66.5	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	83.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	146.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	37	12	222	12	222	12	1194	74	110	949	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1786		1770	1556		1770	3503		1770	3532	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1786		1770	1556		1770	3503		1770	3532	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	27	41	13	244	13	244	13	1312	81	121	1043	13
RTOR Reduction (vph)	0	12	0	0	122	0	0	4	0	0	1	0
Lane Group Flow (vph)	27	42	0	244	135	0	13	1389	0	121	1055	0
Confl. Peds. (#/hr)			1			1			1			1
Confl. Bikes (#/hr)			3			3			2			1
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.8	6.8		12.2	17.2		0.5	37.9		6.1	43.5	
Effective Green, g (s)	1.8	6.8		12.2	17.2		0.5	38.9		6.1	44.5	
Actuated g/C Ratio	0.02	0.08		0.15	0.22		0.01	0.49		0.08	0.56	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	2.0		1.0	2.0		1.0	3.1		1.0	3.1	
Lane Grp Cap (vph)	40	152		270	335		11	1703		135	1965	
v/s Ratio Prot	0.02	0.02		c0.14	c0.09		0.01	c0.40		c0.07	0.30	
v/s Ratio Perm												
v/c Ratio	0.68	0.28		0.90	0.40		1.18	0.82		0.90	0.54	
Uniform Delay, d1	38.8	34.3		33.3	27.0		39.8	17.5		36.6	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.9	0.4		30.2	0.3		338.7	3.2		46.4	0.3	
Delay (s)	68.8	34.7		63.5	27.3		378.5	20.6		83.0	11.5	
Level of Service	E	C		E	C		F	C		F	B	
Approach Delay (s)		46.0			44.9			24.0			18.9	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1292	123	0	1270	0	443
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1520	145	0	1494	0	521
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1283		
pX, platoon unblocked						
vC, conflicting volume			1665		2267	1520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1665		2267	1520
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			382		34	108

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1520	145	747	747	521
Volume Left	0	0	0	0	0
Volume Right	0	145	0	0	521
cSH	1700	1700	1700	1700	108
Volume to Capacity	0.89	0.09	0.44	0.44	4.84
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	1416.1		
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations						
Volume (vph)	1139	359	911	911	664	1071
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.88	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	1562	3433	2723	3433	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	1562	3433	2723	3433	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1212	382	969	969	706	1139
RTOR Reduction (vph)	0	260	0	620	0	2
Lane Group Flow (vph)	1212	122	969	349	706	1137
Confl. Peds. (#/hr)		1		2		
Turn Type		Perm		Perm		custom
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	33.5	33.5	38.1	38.1	24.4	66.5
Effective Green, g (s)	34.0	33.5	39.6	39.6	24.4	68.0
Actuated g/C Ratio	0.31	0.30	0.36	0.36	0.22	0.62
Clearance Time (s)	4.5	4.5	5.5	5.5	4.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1061	476	1236	980	762	979
v/s Ratio Prot	c0.35		0.28		0.21	c0.72
v/s Ratio Perm		0.08		0.13		
v/c Ratio	1.14	0.26	0.78	0.36	0.93	1.16
Uniform Delay, d1	38.0	28.9	31.4	25.8	41.9	21.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	75.6	0.1	3.3	0.2	16.9	84.1
Delay (s)	113.6	29.0	34.7	26.1	58.8	105.1
Level of Service	F	C	C	C	E	F
Approach Delay (s)	93.3		30.4		87.4	
Approach LOS	F		C		F	

Intersection Summary			
HCM Average Control Delay	68.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1232	222	80	197	172	148	98	1021	160	123	467	972
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	2787	3433	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1369	247	89	219	191	164	109	1134	178	137	519	1080
RTOR Reduction (vph)	0	0	51	0	0	60	0	0	77	0	0	0
Lane Group Flow (vph)	1369	247	38	219	191	104	109	1134	101	137	519	1080
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			Free
Actuated Green, G (s)	46.8	52.7	52.7	11.6	17.5	17.5	7.4	37.5	37.5	5.1	34.7	126.9
Effective Green, g (s)	47.3	54.2	54.2	12.1	19.0	19.0	7.9	39.0	39.0	5.6	36.7	126.9
Actuated g/C Ratio	0.37	0.43	0.43	0.10	0.15	0.15	0.06	0.31	0.31	0.04	0.29	1.00
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	6.0	
Vehicle Extension (s)	2.0	4.1	4.1	2.0	4.5	4.5	2.0	4.5	4.5	2.0	3.7	
Lane Grp Cap (vph)	1280	1512	676	327	530	237	214	1088	857	151	1023	1583
v/s Ratio Prot	c0.40	0.07		0.06	0.05		0.03	c0.32		0.04	0.15	
v/s Ratio Perm			0.02			0.07			0.04			c0.68
v/c Ratio	1.07	0.16	0.06	0.67	0.36	0.44	0.51	1.04	0.12	0.91	0.51	0.68
Uniform Delay, d1	39.8	22.4	21.3	55.5	48.5	49.1	57.6	44.0	31.6	60.4	37.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.0	0.1	0.1	4.0	0.7	2.2	0.7	38.9	0.1	45.7	0.5	2.4
Delay (s)	85.8	22.5	21.4	59.5	49.2	51.3	58.3	82.9	31.7	106.1	38.1	2.4
Level of Service	F	C	C	E	D	D	E	F	C	F	D	A
Approach Delay (s)		73.3			53.7			74.6			21.2	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	2314	74	86	1489	12	62	12	86	12	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.7	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		0.95	0.95	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3535		1681	1711	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00		0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3535		1681	1711	1583		1750	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	12	2386	76	89	1535	12	64	12	89	12	12	12
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	82	0	12	0
Lane Group Flow (vph)	12	2386	64	89	1547	0	38	38	7	0	24	0
Turn Type	Prot		Perm	Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.1	98.1	98.1	8.6	104.6		10.7	10.7	10.7		3.9	
Effective Green, g (s)	1.7	99.8	98.1	8.2	106.3		10.5	10.5	10.5		3.7	
Actuated g/C Ratio	0.01	0.72	0.71	0.06	0.77		0.08	0.08	0.08		0.03	
Clearance Time (s)	3.6	5.7	5.7	3.6	5.7		3.8	3.8	3.8		3.8	
Vehicle Extension (s)	2.2	3.2	3.2	2.2	3.2		3.1	3.1	3.1		3.1	
Lane Grp Cap (vph)	22	2556	1124	105	2719		128	130	120		47	
v/s Ratio Prot	0.01	c0.67		c0.05	0.44		c0.02	0.02			c0.01	
v/s Ratio Perm			0.04						0.00			
v/c Ratio	0.55	0.93	0.06	0.85	0.57		0.30	0.29	0.06		0.52	
Uniform Delay, d1	67.9	16.4	6.1	64.4	6.5		60.4	60.3	59.3		66.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	16.4	7.1	0.0	42.4	0.3		1.3	1.3	0.2		9.6	
Delay (s)	84.3	23.5	6.1	106.8	6.8		61.7	61.6	59.5		76.0	
Level of Service	F	C	A	F	A		E	E	E		E	
Approach Delay (s)		23.3			12.3			60.5			76.0	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	138.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX A-2

INTERSECTION TURNING MOVEMENT VOLUMES (TMVs)

INTERSECTION TMV

YR-2007 AM/PM PEAK

2007	Auburn-Folsom Rd.	AM
Douglas Blvd.	420 540 80	Douglas Blvd.
	160 160 590	100 360 110
	1080 310 40	
#1	Auburn-Folsom Rd.	NP

2007	Auburn-Folsom Rd.	PM
Douglas Blvd.	280 440 160	Douglas Blvd.
	390 400 910	80 310 120
	800 500 100	
#1	Auburn-Folsom Rd.	NP

2007	Auburn-Folsom Rd.	AM
Eureka Rd.	120 1200 0	Eureka Rd.
	160 0 120	0 0 0
	150 1230 0	
#2	Auburn-Folsom Rd.	NP

2007	Auburn-Folsom Rd.	PM
Eureka Rd.	100 1210 0	Eureka Rd.
	100 0 200	0 0 0
	130 1350 0	
#2	Auburn-Folsom Rd.	NP

2007	Auburn-Folsom Rd.	AM
Oak Hill Dr.	30 1280 10	Oak Hill Dr.
	20 10 430	10 10 10
	350 1310 10	
#3	Auburn-Folsom Rd.	NP

2007	Auburn-Folsom Rd.	PM
Oak Hill Dr.	20 1260 10	Oak Hill Dr.
	20 10 350	20 10 20
	440 1380 10	
#3	Auburn-Folsom Rd.	NP

2007	Folsom-Auburn Rd.	AM
Exist. Folsom Dam Rd.	60 1640 0	Exist. Folsom Dam Rd.
	0 0 100	0 0 0
	20 1640 0	
#4	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	PM
Exist. Folsom Dam Rd.	60 1550 0	Exist. Folsom Dam Rd.
	0 0 110	0 0 0
	60 1750 0	
#4	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	AM
Auto Spa Driveway	20 880 790 / 30 20 30 / 940 20 160 / 20 690 290	Folsom Lake Crossing
#5	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	PM
Auto Spa Driveway	40 610 960 / 50 20 40 / 890 20 370 / 30 870 230	Folsom Lake Crossing
#5	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	AM
Oak Avenue Pkwy.	110 980 10 / 170 10 790 / 10 10 40 / 190 840 10	Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	PM
Oak Avenue Pkwy.	250 710 10 / 140 10 560 / 10 20 30 / 760 1000 40	Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	AM
Greenback Ln.	160 1510 290 / 210 770 830 / 470 740 20 / 300 320 10	Greenback Ln.
#7	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	PM
Greenback Ln.	300 610 470 / 330 640 550 / 750 880 10 / 960 1000 10	Greenback Ln.
#7	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	AM
Forrest St.	10 2260 110 / 10 20 20 / 160 0 200 / 10 460 200	Natoma St.
#8	Folsom-Auburn Rd.	NP

2007	Folsom-Auburn Rd.	PM
Forrest St.	20 750 430 / 10 20 10 / 420 20 150 / 20 1540 190	Natoma St.
#8	Folsom-Auburn Rd.	NP

2007	Riley St.	AM
	0 / 1060 / 10	
	0 / 0 / 0	10 / 0 / 10
	0 / 1220 / 10	
#9	Riley St.	NP

Scott St.

2007	Riley St.	PM
	0 / 1110 / 10	
	0 / 0 / 0	20 / 0 / 20
	0 / 1620 / 20	
#9	Riley St.	NP

Scott St.

2007	Riley St.	AM
	80 / 990 / 0	
	30 / 0 / 10	0 / 0 / 0
	0 / 1200 / 0	
#10	Riley St.	NP

Leidesdorff St.

2007	Riley St.	PM
	70 / 1060 / 0	
	190 / 0 / 20	0 / 0 / 0
	0 / 1450 / 0	
#10	Riley St.	NP

Leidesdorff St.

2007	Riley St.	AM
	10 / 980 / 10	
	10 / 20 / 10	10 / 10 / 10
	10 / 1180 / 10	
#11	Riley St.	NP

Sutter St.

2007	Riley St.	PM
	30 / 1040 / 10	
	30 / 100 / 50	40 / 40 / 40
	10 / 1380 / 20	
#11	Riley St.	NP

Sutter St.

2007	Riley St.	AM
	10 / 670 / 320	
	20 / 370 / 80	800 / 330 / 50
	20 / 380 / 20	
#12	Riley St.	NP

Natoma St.

2007	Riley St.	PM
	20 / 610 / 500	
	20 / 440 / 110	670 / 340 / 100
	40 / 720 / 10	
#12	Riley St.	NP

Natoma St.

2007	Riley St.			AM
		0	400	390
	0			240
	0			0
	0			300
		0	180	140
#13	Riley St.			NP

2007	Riley St.			PM
		0	480	320
	0			340
	0			0
	0			170
		0	410	230
#13	Riley St.			NP

2007	Natoma St.			AM
		20	1100	50
Coloma St.	20			50
	50			30
	10			90
		10	650	40
#14	Natoma St.			NP

2007	Natoma St.			PM
		60	860	60
Coloma St.	30			130
	50			100
	10			240
		10	910	30
#14	Natoma St.			NP

2007	Natoma St.			AM
		10	1080	90
Wales Dr.	10			100
	10			10
	10			80
		10	700	30
#15	Natoma St.			NP

2007	Natoma St.			PM
		10	770	90
Wales Dr.	20			180
	30			10
	10			180
		10	970	60
#15	Natoma St.			NP

2007	Natoma St.			AM
		0	1290	0
	0			200
	0			0
	0			0
		0	670	100
#16	Natoma St.			NP

2007	Natoma St.			PM
		0	1030	0
	0			360
	0			0
	0			0
		0	1050	100
#16	Natoma St.			NP

2007				AM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	820			780	
	280			1010	
		340	0	530	
#17	Natoma St.			NP

2007				PM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	920			740	
	290			740	
		540	0	870	
#17	Natoma St.			NP

2007	Green Valley Rd.			AM
E. Natoma St.		1020	810	100	E. Natoma St.
	720			60	
	110			220	
	50			160	
		90	190	130	
#18	Blue Ravine Rd.			NP

2007	Green Valley Rd.			PM
E. Natoma St.		790	380	100	E. Natoma St.
	1000			120	
	180			140	
	60			160	
		80	830	130	
#18	Blue Ravine Rd.			NP

2007	Green Valley Rd.			AM
Access Rd.		10	1840	30	Sophia Pkwy.
	10			50	
	10			10	
	10			80	
		10	890	70	
#19	Green Valley Rd.			NP

2007	Green Valley Rd.			PM
Access Rd.		10	1210	70	Sophia Pkwy.
	10			70	
	10			10	
	10			50	
		10	1880	60	
#19	Green Valley Rd.			NP

INTERSECTION TMV

YR-2010 NO-BUILD AM/PM PEAK

2010	Auburn-Folsom Rd.			AM
		459	590	87
Douglas Blvd.	175			109
	175			393
	645			120
		1180	339	44
#1	Auburn-Folsom Rd.			NP

2010	Auburn-Folsom Rd.			PM
		306	481	175
Douglas Blvd.	426			87
	437			339
	994			131
		874	546	109
#1	Auburn-Folsom Rd.			NP

2010	Auburn-Folsom Rd.			AM
		131	1311	0
Eureka Rd.	175			0
	0			0
	131			0
		164	1344	0
#2	Auburn-Folsom Rd.			NP

2010	Auburn-Folsom Rd.			PM
		109	1322	0
Eureka Rd.	109			0
	0			0
	219			0
		142	1475	0
#2	Auburn-Folsom Rd.			NP

2010	Auburn-Folsom Rd.			AM
		33	1399	11
Oak Hill Dr.	22			11
	11			11
	470			11
		382	1431	11
#3	Auburn-Folsom Rd.			NP

2010	Auburn-Folsom Rd.			PM
		22	1377	11
Oak Hill Dr.	22			22
	11			11
	382			22
		481	1508	11
#3	Auburn-Folsom Rd.			NP

2010	Folsom-Auburn Rd.			AM
		66	1792	0
Exist. Folsom Dam Rd.	0			0
	0			0
	109			0
		22	1792	0
#4	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			PM
		66	1694	0
Exist. Folsom Dam Rd.	0			0
	0			0
	120			0
		66	1912	0
#4	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			AM
Auto Spa Driveway		22	962	863	Folsom Lake Crossing
	33			1027
	22			22
	33			175
		22	754	317	
#5	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			PM
Auto Spa Driveway		44	667	1049	Folsom Lake Crossing
	55			973
	22			22
	44			404
		33	951	251	
#5	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			AM
Oak Avenue Pkwy.		120	1071	11	Oak Avenue Pkwy.
	186			11
	11			11
	863			44
		208	918	11	
#6	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			PM
Oak Avenue Pkwy.		273	776	11	Oak Avenue Pkwy.
	153			11
	11			22
	612			33
		830	1093	44	
#6	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			AM
Greenback Ln.		175	1650	317	Greenback Ln.
	229			514
	841			809
	907			22
		328	350	11	
#7	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			PM
Greenback Ln.		328	667	514	Greenback Ln.
	361			820
	699			962
	601			11
		1049	1093	11	
#7	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			AM
Forrest St.		11	2470	120	Natoma St.
	11			175
	22			0
	22			219
		11	503	219	
#8	Folsom-Auburn Rd.			NP

2010	Folsom-Auburn Rd.			PM
Forrest St.		22	820	470	Natoma St.
	11			459
	22			22
	11			164
		22	1683	208	
#8	Folsom-Auburn Rd.			NP

2010	Riley St.			AM
		0	1158	11
	0			11
	0			0
	0			11
		0	1333	11
#9	Riley St.			NP

Scott St.

2010	Riley St.			PM
		0	1213	11
	0			22
	0			0
	0			22
		0	1770	22
#9	Riley St.			NP

Scott St.

2010	Riley St.			AM
		87	1082	0
	33			0
	0			0
	11			0
		0	1311	0
#10	Riley St.			NP

Leidesdorff St.

2010	Riley St.			PM
		76	1158	0
	208			0
	0			0
	22			0
		0	1584	0
#10	Riley St.			NP

Leidesdorff St.

2010	Riley St.			AM
		11	1071	11
	11			11
	22			11
	11			11
		11	1289	11
#11	Riley St.			NP

Sutter St.

2010	Riley St.			PM
		33	1136	11
	33			44
	109			44
	55			44
		11	1508	22
#11	Riley St.			NP

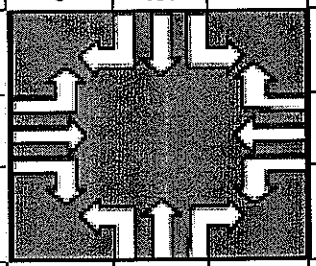
Sutter St.

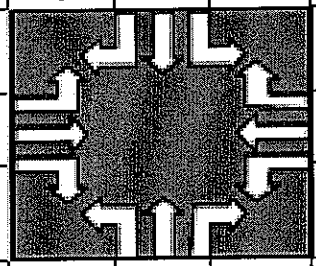
2010	Riley St.			AM
		11	732	350
	22			874
	404			361
	87			55
		22	415	22
#12	Riley St.			NP

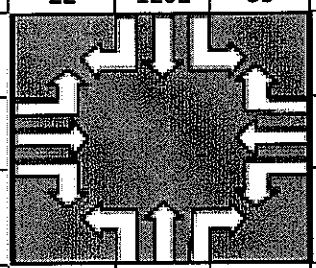
Natoma St.

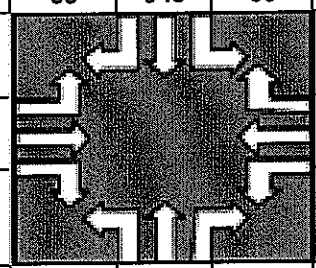
2010	Riley St.			PM
		22	667	546
	22			732
	481			372
	120			109
		44	787	11
#12	Riley St.			NP

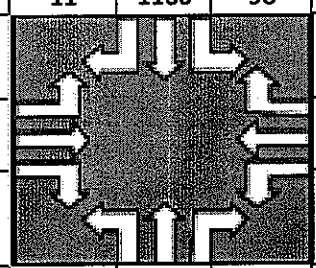
Natoma St.

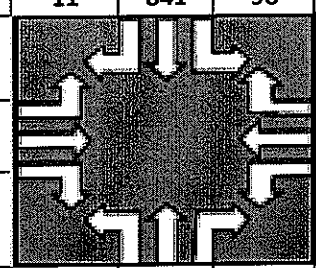
2010	Riley St.	AM
	0 / 437 / 426	
0 / 0 / 0		262 / 0 / 328 — E. Bidwell St.
	0 / 197 / 153	
#13	Riley St.	NP

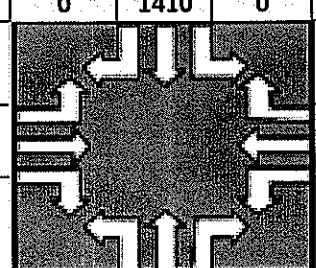
2010	Riley St.	PM
	0 / 525 / 350	
0 / 0 / 0		372 / 0 / 186 — E. Bidwell St.
	0 / 448 / 251	
#13	Riley St.	NP

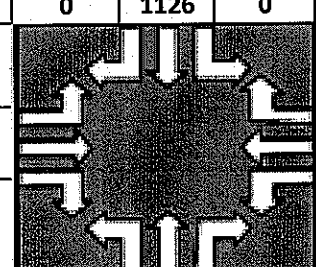
2010	Natoma St.	AM
	22 / 1202 / 55	
Coloma St. 22 / 55 / 11		55 / 33 / 98 — Coloma St.
	11 / 710 / 44	
#14	Natoma St.	NP

2010	Natoma St.	PM
	66 / 940 / 66	
Coloma St. 33 / 55 / 11		142 / 109 / 262 — Coloma St.
	11 / 994 / 33	
#14	Natoma St.	NP

2010	Natoma St.	AM
	11 / 1180 / 98	
Wales Dr. 11 / 11 / 11		109 / 11 / 87 — Wales Dr.
	11 / 765 / 33	
#15	Natoma St.	NP

2010	Natoma St.	PM
	11 / 841 / 98	
Wales Dr. 22 / 33 / 11		197 / 11 / 197 — Wales Dr.
	11 / 1060 / 66	
#15	Natoma St.	NP

2010	Natoma St.	AM
	0 / 1410 / 0	
0 / 0 / 0		219 / 0 / 0 — Briggs Ranch Dr.
	0 / 732 / 109	
#16	Natoma St.	NP

2010	Natoma St.	PM
	0 / 1126 / 0	
0 / 0 / 0		393 / 0 / 0 — Briggs Ranch Dr.
	0 / 1147 / 109	
#16	Natoma St.	NP

2010				AM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	896			852	
	306			1104	
		372	0	579	
#17	Natoma St.			NP

2010				PM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	1005			809	
	317			809	
		590	0	951	
#17	Natoma St.			NP

2010				AM
E. Natoma St.		1115	885	109	E. Natoma St.
	787			66	
	120			240	
	55			175	
		98	208	142	
#18	Blue Ravine Rd.			NP

2010				PM
E. Natoma St.		863	415	109	E. Natoma St.
	1093			131	
	197			153	
	66			175	
		87	907	142	
#18	Blue Ravine Rd.			NP

2010				AM
Access Rd.		11	2011	33	Sophia Pkwy.
	11			55	
	11			11	
	11			87	
		11	973	76	
#19	Green Valley Rd.			NP

2010				PM
Access Rd.		11	1322	76	Sophia Pkwy.
	11			76	
	11			11	
	11			55	
		11	2054	66	
#19	Green Valley Rd.			NP

INTERSECTION TMV

YR-2016 NO-BUILD AM/PM PEAK

2016	Auburn-Folsom Rd.			AM
		517	664	98	
Douglas Blvd.	197			123	Douglas Blvd.
	197			443	
	726			135	
		1329	382	50	
#1	Auburn-Folsom Rd.			NP

2016	Auburn-Folsom Rd.			PM
		345	542	197	
Douglas Blvd.	480			98	Douglas Blvd.
	492			382	
	1119			148	
		984	615	123	
#1	Auburn-Folsom Rd.			NP

2016	Auburn-Folsom Rd.			AM
		148	1476	0	
Eureka Rd.	197			0	Eureka Rd.
	0			0	
	148			0	
		185	1514	0	
#2	Auburn-Folsom Rd.			NP

2016	Auburn-Folsom Rd.			PM
		123	1489	0	
Eureka Rd.	123			0	Eureka Rd.
	0			0	
	247			0	
		160	1661	0	
#2	Auburn-Folsom Rd.			NP

2016	Auburn-Folsom Rd.			AM
		37	1576	12	
Oak Hill Dr.	25			12	Oak Hill Dr.
	12			12	
	529			12	
		430	1612	12	
#3	Auburn-Folsom Rd.			NP

2016	Auburn-Folsom Rd.			PM
		25	1551	12	
Oak Hill Dr.	25			25	Oak Hill Dr.
	12			12	
	430			25	
		542	1698	12	
#3	Auburn-Folsom Rd.			NP

2016	Folsom-Auburn Rd.			AM
		74	2018	0	
Exist. Folsom Dam Rd.	0			0	Exist. Folsom Dam Rd.
	0			0	
	123			0	
		25	2018	0	
#4	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			PM
		74	1908	0	
Exist. Folsom Dam Rd.	0			0	Exist. Folsom Dam Rd.
	0			0	
	135			0	
		74	2153	0	
#4	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			AM
Auto Spa Driveway		25	1083	972
	37			1157
	25			25
	37			197
		25	849	357
				Folsom Lake Crossing
#5	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			PM
Auto Spa Driveway		50	751	1181
	62			1096
	25			25
	50			455
		37	1071	283
				Folsom Lake Crossing
#5	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			AM
Oak Avenue Pkwy.		135	1206	12
	209			12
	12			12
	972			50
		234	1034	12
				Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			PM
Oak Avenue Pkwy.		307	874	12
	172			12
	12			25
	689			37
		935	1231	50
				Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			AM
Greenback Ln.		197	1858	357
	258			579
	947			911
	1021			25
		369	394	12
				Greenback Ln.
#7	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			PM
Greenback Ln.		369	751	579
	407			923
	787			1083
	677			12
		1181	1231	12
				Greenback Ln.
#7	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			AM
Forrest St.		12	2782	135
	12			197
	25			0
	25			247
		12	566	247
				Natoma St.
#8	Folsom-Auburn Rd.			NP

2016	Folsom-Auburn Rd.			PM
Forrest St.		25	923	529
	12			517
	25			25
	12			185
		25	1895	234
				Natoma St.
#8	Folsom-Auburn Rd.			NP

2016	Riley St.			AM
		0	1304	12
	0			12
	0			0
	0			12
		0	1501	12
#9	Riley St.			NP

2016	Riley St.			PM
		0	1366	12
	0			25
	0			0
	0			25
		0	1993	25'
#9	Riley St.			NP

2016	Riley St.			AM
Leidesdorff St.		98	1219	0
	37			0
	0			0
	12			0
		0	1476	0
#10	Riley St.			NP

2016	Riley St.			PM
Leidesdorff St.		86	1304	0
	234			0
	0			0
	25			0
		0	1784	0
#10	Riley St.			NP

2016	Riley St.			AM
Sutter St.		12	1206	12
	12			12
	25			12
	12			12
		12	1452	12
#11	Riley St.			NP

2016	Riley St.			PM
Sutter St.		37	1279	12
	37			50
	123			50
	62			50
		12	1698	25
#11	Riley St.			NP

2016	Riley St.			AM
Natoma St.		12	824	394
	25			984
	455			407
	98			62
		25	467	25
#12	Riley St.			NP

2016	Riley St.			PM
Natoma St.		25	751	615
	25			824
	542			419
	135			123
		50	886	12
#12	Riley St.			NP

2016	Riley St.			AM
		0	492	480
	0			295
	0			0
	0			369
		0	222	172
#13	Riley St.			NP

2016	Riley St.			PM
		0	591	394
	0			419
	0			0
	0			209
		0	505	283
#13	Riley St.			NP

2016	Natoma St.			AM
		25	1354	62
Coloma St.	25			62
	62			37
	12			110
		12	800	50
#14	Natoma St.			NP

2016	Natoma St.			PM
		74	1059	74
Coloma St.	37			160
	62			123
	12			295
		12	1119	37
#14	Natoma St.			NP

2016	Natoma St.			AM
		12	1329	110
Wales Dr.	12			123
	12			12
	12			98
		12	862	37
#15	Natoma St.			NP

2016	Natoma St.			PM
		12	947	110
Wales Dr.	25			222
	37			12
	12			222
		12	1194	74
#15	Natoma St.			NP

2016	Natoma St.			AM
		0	1588	0
	0			247
	0			0
	0			0
		0	824	123
#16	Natoma St.			NP

2016	Natoma St.			PM
		0	1268	0
	0			443
	0			0
	0			0
		0	1292	123
#16	Natoma St.			NP

2016				AM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	1009			959	
	345			1243	
		419	0	652	
#17	Natoma St.			NP

2016				PM
Folsom Lake Crossing		0	0	0	E. Natoma St.
	0			0	
	1132			911	
	357			911	
		664	0	1071	
#17	Natoma St.			NP

2016	Green Valley Rd.			AM
E. Natoma St.		1256	997	123	E. Natoma St.
	886			74	
	135			270	
	62			197	
		110	234	160	
#18	Blue Ravine Rd.			NP

2016	Green Valley Rd.			PM
E. Natoma St.		972	467	123	E. Natoma St.
	1231			148	
	222			172	
	74			197	
		98	1021	160	
#18	Blue Ravine Rd.			NP

2016	Green Valley Rd.			AM
Access Rd.		12	2265	37	Sophia Pkwy.
	12			62	
	12			12	
	12			98	
		12	1096	86	
#19	Green Valley Rd.			NP

2016	Green Valley Rd.			PM
Access Rd.		12	1489	86	Sophia Pkwy.
	12			86	
	12			12	
	12			62	
		12	2313	74	
#19	Green Valley Rd.			NP

INTERSECTION TMV

BUILD CONDITIONS ADD-ON TMV AM/PM PEAK

Add-on	Auburn-Folsom Rd.	AM
Douglas Blvd.	0 2 0 0 0 0 22 0 0 0 0 0	Douglas Blvd.
#1	Auburn-Folsom Rd.	Veh

Add-on	Auburn-Folsom Rd.	PM
Douglas Blvd.	0 0 0 0 0 0 0 0 0 22 2 0	Douglas Blvd.
#1	Auburn-Folsom Rd.	Veh

Add-on	Auburn-Folsom Rd.	AM
Eureka Rd.	0 24 0 0 0 0 1 0 0 0 0 0	Eureka Rd.
#2	Auburn-Folsom Rd.	Veh

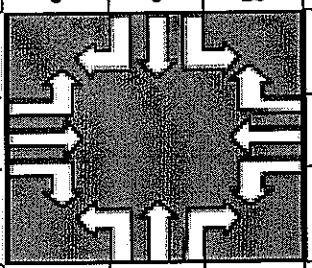
Add-on	Auburn-Folsom Rd.	PM
Eureka Rd.	0 0 0 0 0 0 0 0 0 1 24 0	Eureka Rd.
#2	Auburn-Folsom Rd.	Veh

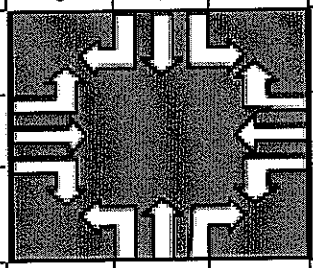
Add-on	Auburn-Folsom Rd.	AM
Oak Hill Dr.	0 25 0 0 0 0 0 0 0 0 0 0	Oak Hill Dr.
#3	Auburn-Folsom Rd.	Veh

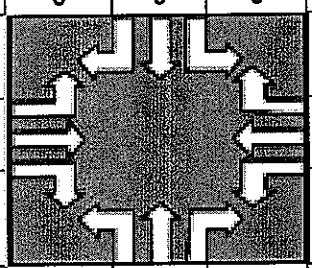
Add-on	Auburn-Folsom Rd.	PM
Oak Hill Dr.	0 0 0 0 0 0 0 0 0 0 25 0	Oak Hill Dr.
#3	Auburn-Folsom Rd.	Veh

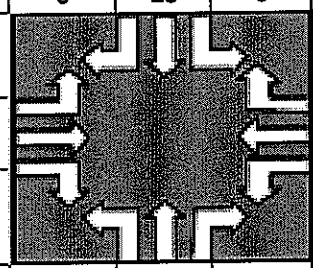
Add-on	Folsom-Auburn Rd.	AM
Exist. Folsom Dam Rd.	0 25 0 0 0 0 0 0 0 0 0 0	Exist. Folsom Dam Rd.
#4	Folsom-Auburn Rd.	Veh

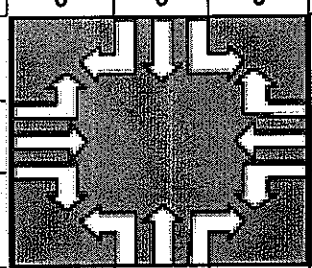
Add-on	Folsom-Auburn Rd.	PM
Exist. Folsom Dam Rd.	0 0 0 0 0 0 0 0 0 0 25 0	Exist. Folsom Dam Rd.
#4	Folsom-Auburn Rd.	Veh

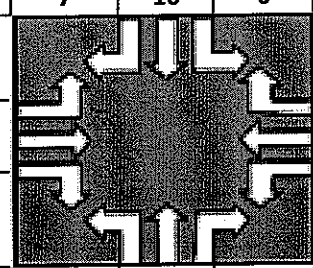
Add-on	Folsom-Auburn Rd.	AM
Auto Spa Driveway	0 0 25 0 0 0  0 0 0 0 0 23	Folsom Lake Crossing
#5	Folsom-Auburn Rd.	Veh

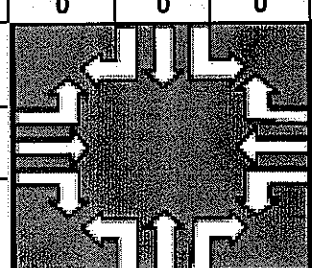
Add-on	Folsom-Auburn Rd.	PM
Auto Spa Driveway	0 0 0 0 0 0  25 0 23 0 0 0	Folsom Lake Crossing
#5	Folsom-Auburn Rd.	Veh

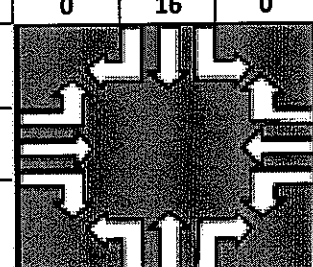
Add-on	Folsom-Auburn Rd.	AM
Oak Avenue Pkwy.	0 0 0 0 0 0  0 0 0 0 23 0	Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.	Veh

Add-on	Folsom-Auburn Rd.	PM
Oak Avenue Pkwy.	0 23 0 0 0 0  0 0 0 0 0 0	Oak Avenue Pkwy.
#6	Folsom-Auburn Rd.	Veh

Add-on	Folsom-Auburn Rd.	AM
Greenback Ln.	0 0 0 7 0 0  0 0 0 0 16 0	Greenback Ln.
#7	Folsom-Auburn Rd.	Veh

Add-on	Folsom-Auburn Rd.	PM
Greenback Ln.	7 16 0 0 0 0  0 0 0 0 0 0	Greenback Ln.
#7	Folsom-Auburn Rd.	Veh

Add-on	Folsom-Auburn Rd.	AM
Forrest St.	0 0 0 0 0 0  0 0 0 0 16 0	Natoma St.
#8	Folsom-Auburn Rd.	Veh

Add-on	Folsom-Auburn Rd.	PM
Forrest St.	0 16 0 0 0 0  0 0 0 0 0 0	Natoma St.
#8	Folsom-Auburn Rd.	Veh

Add-on	Riley St.	AM
	0 0 0	
	0 0 0	Scott St.
	0 0 0	
#9	Riley St.	Veh

Add-on	Riley St.	PM
	0 0 0	
	0 0 0	Scott St.
	0 0 0	
#9	Riley St.	Veh

Add-on	Riley St.	AM
Leidesdorff St.	0 0 0	
	0 0 0	
	0 0 0	
#10	Riley St.	Veh

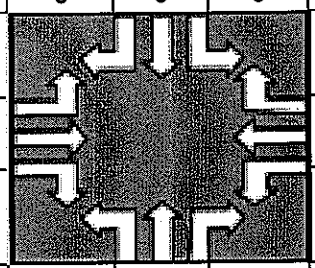
Add-on	Riley St.	PM
Leidesdorff St.	0 0 0	
	0 0 0	
	0 0 0	
#10	Riley St.	Veh

Add-on	Riley St.	AM
Sutter St.	0 0 0	
	0 0 0	Sutter St.
	0 0 0	
#11	Riley St.	Veh

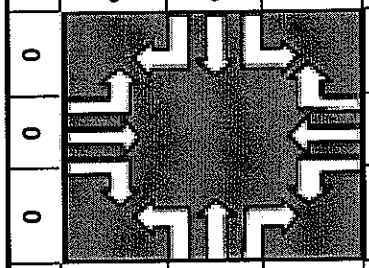
Add-on	Riley St.	PM
Sutter St.	0 0 0	
	0 0 0	Sutter St.
	0 0 0	
#11	Riley St.	Veh

Add-on	Riley St.	AM
Natoma St.	0 0 0	
	0 0 0	Natoma St.
	0 0 0	
#12	Riley St.	Veh

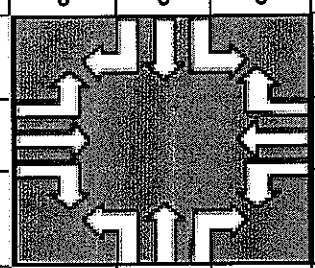
Add-on	Riley St.	PM
Natoma St.	0 0 0	
	0 0 0	Natoma St.
	0 0 2	
#12	Riley St.	Veh

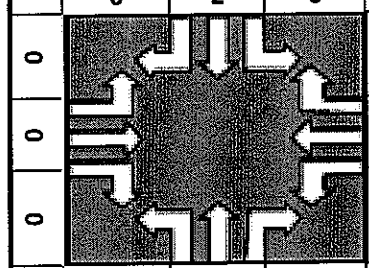
Add-on	Riley St.	AM
	0 0 0	
0 0 0		2 0 0
	0 0 0	
#13	Riley St.	Veh

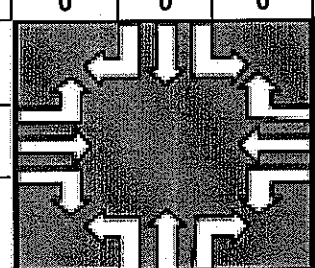
E. Bidwell St.

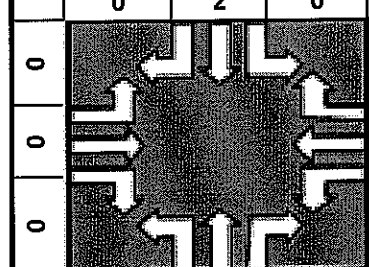
Add-on	Riley St.	PM
	0 0 2	
0 0 0		0 0 0
	0 0 0	
#13	Riley St.	Veh

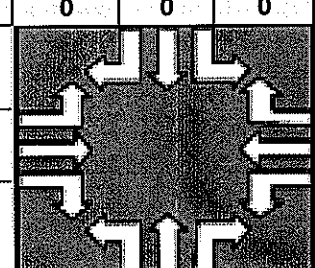
E. Bidwell St.

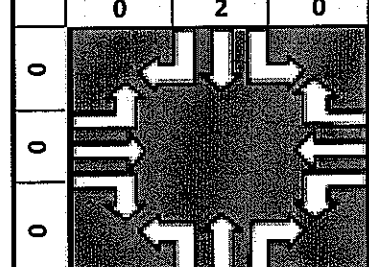
Add-on	Natoma St.	AM
	0 0 0	
Coloma St.	0 0 0  0 0 0	Coloma St.
	0 2 0	
#14	Natoma St.	Veh

Add-on	Natoma St.	PM
	0 2 0	
Coloma St.	0 0 0  0 0 0	Coloma St.
	0 0 0	
#14	Natoma St.	Veh

Add-on	Natoma St.	AM
	0 0 0	
Wales Dr.	0 0 0  0 0 0	Wales Dr.
	0 2 0	
#15	Natoma St.	Veh

Add-on	Natoma St.	PM
	0 2 0	
Wales Dr.	0 0 0  0 0 0	Wales Dr.
	0 0 0	
#15	Natoma St.	Veh

Add-on	Natoma St.	AM
	0 0 0	
	0 0 0  0 0 0	Briggs Ranch Dr.
	0 2 0	
#16	Natoma St.	Veh

Add-on	Natoma St.	PM
	0 2 0	
	0 0 0  0 0 0	Briggs Ranch Dr.
	0 0 0	
#16	Natoma St.	Veh

Add-on		AM
Folsom Lake Crossing	0 0 0 / 0 0 0 / 0 7 0 / 2 0 0	E. Natoma St.
#17	Natoma St.	Veh

Add-on		PM
Folsom Lake Crossing	0 0 0 / 0 0 0 / 0 7 2 / 0 0 0	E. Natoma St.
#17	Natoma St.	Veh

Add-on	Green Valley Rd.	AM
E. Natoma St.	1 0 0 / 0 0 0 / 0 0 0 / 6 0 0	E. Natoma St.
#18	Blue Ravine Rd.	Veh

Add-on	Green Valley Rd.	PM
E. Natoma St.	0 0 0 / 0 0 0 / 1 0 0 / 0 0 0	E. Natoma St.
#18	Blue Ravine Rd.	Veh

Add-on	Green Valley Rd.	AM
Access Rd.	0 1 0 / 0 0 0 / 0 0 0 / 0 0 0	Sophia Pkwy.
#19	Green Valley Rd.	Veh

Add-on	Green Valley Rd.	PM
Access Rd.	0 0 0 / 0 0 0 / 0 0 0 / 0 1 0	Sophia Pkwy.
#19	Green Valley Rd.	Veh

APPENDIX A-3

ROADWAY SEGMENTS TRAFFIC VOLUMES

ROADWAY SEGMENT TRAFFIC VOLUMES

YR-2004,2007, AND 2010 ADT AND LOS

Roadway Segment LOS - Folsom Dam Control Structure and Stilling Basin Project - **2004-2010 Conditions**

Roadway Segment	Year 2004 Conditions [1]			Year 2007 Conditions [1]			Base Year 2010 Conditions [2]		
	Functional Class	Traffic Count	LOS	Functional Class	Traffic Volumes	LOS	Functional Class	Traffic Volumes	LOS
1. Douglas Boulevard – Barton Road to Folsom-Auburn Road	4AD	36,000	E	4AD	40,200	F	4AD	43,928	F
2. Barton Road – Douglas Boulevard to Eureka Road	2A	8,300	C	2A	11,300	D	2A	12,348	D
3. Eureka Road – Barton Road to Folsom-Auburn Road	2A	4,700	C	2A	5,200	C	2A	5,682	C
4. Auburn-Folsom Road – Douglas Boulevard to Eureka Road	2A	30,900	F	4AU	34,300	F	4AU	37,481	F
5. Auburn-Folsom Road – Eureka Road to Oak Hill Drive	2A	26,500	F	2A	30,500	F	2A	33,328	F
6. Folsom-Auburn Road – Oak Hill Drive to Folsom Dam Road	2A	31,300	F	4AU	40,300	F	4AD	44,037	F
7. Folsom-Auburn Road – Folsom Dam Road to Oak Avenue	4AU	28,600	E	4AU	21,400	D	4AU	23,384	D
8. Folsom Boulevard – Greenback Lane to Leidesdorff Street	4AD	34,900	D	4AD	32,600	D	4AD	35,623	E
9. Folsom Boulevard – Natoma Street to Blue Ravine Road	4AD	37,800	F	4AD	37,800	F	4AD	41,305	F
10. Folsom Boulevard – Blue Ravine Road to Iron Point Road	4AD	30,600	D	4AD	30,600	D	4AD	33,437	D
11. Oak Hill Drive – Barton Road to Folsom-Auburn Road	2C	900	C	2C	5,400	C	2C	5,901	D
12. Santa Juanita Avenue – Barton Road to Oak Avenue Parkway	2A	4,700	C	2A	4,800	C	2A	5,245	C
13. Sierra College Boulevard – Douglas Boulevard to Eureka Road	4AD	25,900	D	4AD	29,400	D	4AD	32,126	D
14. Hazel Avenue – Oak Avenue to Greenback Lane	4AMD	35,400	E	4AMD	35,400	E	4AMD	38,683	F
15. Hazel Avenue – Greenback Lane to Madison Avenue	4AMD	43,100	F	4AMD	43,800	F	4AMD	47,861	F
16. Hazel Avenue – Winding Way to Gold Country Boulevard	4AHD	55,800	F	4AMD	56,700	F	4AMD	61,958	F
17. Oak Avenue Parkway – Hazel Avenue to Santa Juanita Avenue	2AMD	9,900	A	2AMD	12,400	B	2AMD	13,550	C
18. Oak Avenue Parkway – American River Canyon Drive to Folsom-Auburn Road	2A	12,400	D	4AD	16,200	C	4AD	17,702	C
19. Greenback Lane – Hazel Avenue to Madison Avenue	4AMD	23,400	B	4AMD	24,100	B	4AMD	26,335	C
20. Madison Avenue – Hazel Avenue to Greenback Lane	4AMD	31,600	D	4AMD	32,800	E	4AMD	35,841	E
21. Rainbow Bridge – Folsom Boulevard to Leidesdorff Street	2A	46,500	F	2A	40,300	F	2A	44,037	F
22. Folsom Dam Road – Folsom-Auburn Road to East Natoma Street [3]	2A	-	-	2A	-	-	2A	-	-
23. East Natoma Street – Cimmaron Circle to Folsom Dam Road	2A	18,400	E	4AU	16,600	C	4AU	18,139	D
24. East Natoma Street – Folsom Dam Road to Green Valley Road	2A	16,300	D	4AU	27,100	D	4AU	29,613	F
25. Green Valley Road – East Natoma Street to Sophia Parkway	2A	24,400	F	4AU	32,000	F	4AU	34,967	F
26. Sophia Parkway – Green Valley Road to Elmores Way	2A	1,100	C	2A	6,500	C	4AD	7,103	C
27. El Dorado Hills Boulevard – Green Valley Road to Francisco Drive	2A	5,900	C	2A	7,700	C	2A	8,414	C
28. Briggs Ranch Drive – East Natoma Street to Oak Avenue Parkway	2C	900	C	2C	6,100	D	2C	6,666	D
29. Oak Avenue Parkway – Willow Creek Drive to Blue Ravine Road	4AD	6,927	C	4AD	8,800	C	4AD	9,616	C
30. Oak Avenue Parkway – Blue Ravine Road to East Bidwell Street	6AD	17,600	C	6AD	22,200	C	6AD	24,259	C
31. Oak Avenue Parkway – East Bidwell Street to Riley Street	4AD	10,600	C	6AD	13,000	C	6AD	14,205	C
32. East Bidwell Street – Glenn Street to Blue Ravine Road	4AD	20,221	D	4AD	20,200	D	4AD	22,073	D
33. East Bidwell Street – Blue Ravine Road to Oak Avenue Parkway	4AD	24,000	D	4AD	25,100	D	6AD	27,427	D
34. East Bidwell Street – Clarksville Road to Iron Point Road	4AD	32,800	D	4AD	39,300	F	6AD	42,944	D
35. Sibley Street – Glenn Drive to Blue Ravine Road	2A	19,087	F	2A	22,600	F	2A	24,696	F
36. Prairie City Road – Blue Ravine Road to Iron Point Road	4AD	21,446	D	4AD	22,500	D	4AD	24,586	D

37. Blue Ravine Road – Folsom Boulevard to Sibley Street	6AD	18,100	C	6AD	18,100	C	6AD	19,778	C
38. Blue Ravine Road – Sibley Street to Riley Street	4AU	29,100	F	4AU	29,100	F	4AU	31,798	F
39. Blue Ravine Road – Riley Street to East Bidwell Street	4AU	23,448	D	4AU	23,400	D	4AU	25,570	D
40. Blue Ravine Road – East Bidwell Street to Oak Avenue Parkway	4AD	17,294	C	4AD	17,300	C	4AD	18,904	C
41. Blue Ravine Road – Oak Avenue Parkway to Green Valley Road	4AD	18,200	C	4AD	19,500	D	4AD	21,308	D
42. Iron Point Road – Black Diamond Drive to Prairie City Road	4AD	13,000	C	4AD	14,500	C	4AD	15,845	C
43. U.S. 50 – Hazel Avenue to Folsom Boulevard	4FA	111,800	F	4FA	116,800	F	4FA	127,631	F
44. U.S. 50 – Folsom Boulevard to Prairie City Road	4F	94,400	F	4F	99,000	F	4F	108,180	F
45. U.S. 50 – Prairie City Road to East Bidwell Street	4F	71,800	E	4F	71,800	E	4F	78,458	E
46. U.S. 50 – East Bidwell Street to County line	4F	77,000	E	4F	81,900	F	4F	89,494	F
47. Folsom Lake Crossing Bridge	-	-	-	4AHD	26,400	B	4AHD	28,848	C
Folsom Bridge Summary (segments 8,21, and 47)	-	81,400	-	-	99,300	-	-	108,508	-

[1] Data of Functional Class, Traffic Volume, and LOS of Year 2004 and 2007 were from the American River Watershed Project Folsom Bridge Fianl EIS/EIR (Corps 2006)

[2] Base Year 2010 Traffic Volume calculated from Year 2007 ADTs with an annual 3% growth ratio.

[3] Folsom Dam Road has been converted to a restricted access road for construction after the Folsom Lake Crossing was built in 2007.

ROADWAY SEGMENT TRAFFIC VOLUMES

YR 2010 – 2016 NO-BUILD ADT AND LOS

Roadway Segment LOS - Folsom Dam Control Structure and Stilling Basin Project - **2010-2016 No-Build Conditions**

Roadway Segment	Base Year 2010 Conditions			Year 2011 No-Build[1]		Year 2012 No-Build[1]		Year 2013 No-Build[1]		Year 2014 No-Build[1]		Year 2015 No-Build[1]		Year 2016 No-Build[1]	
	Functional Class	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS
1. Douglas Boulevard – Barton Road to Folsom-Auburn Road	4AD	43,928	F	44,806	F	45,702	F	46,616	F	47,549	F	48,500	F	49,470	F
2. Barton Road – Douglas Boulevard to Eureka Road	2A	12,348	D	12,595	D	12,847	D	13,104	D	13,366	D	13,633	D	13,906	D
3. Eureka Road – Barton Road to Folsom-Auburn Road	2A	5,682	C	5,796	C	5,912	C	6,030	C	6,151	C	6,274	C	6,399	C
4. Auburn-Folsom Road – Douglas Boulevard to Eureka Road	4AU	37,481	F	38,230	F	38,995	F	39,775	F	40,570	F	41,382	F	42,209	F
5. Auburn-Folsom Road – Eureka Road to Oak Hill Drive	2A	33,328	F	33,995	F	34,675	F	35,368	F	36,075	F	36,797	F	37,533	F
6. Folsom-Auburn Road – Oak Hill Drive to Folsom Dam Road	4AD	44,037	F	44,918	F	45,816	F	46,732	F	47,667	F	48,620	F	49,593	F
7. Folsom-Auburn Road – Folsom Dam Road to Oak Avenue	4AU	23,384	D	23,852	D	24,329	D	24,816	D	25,312	D	25,818	D	26,335	D
8. Folsom Boulevard – Greenback Lane to Leidesdorff Street	4AD	35,623	E	36,335	E	37,062	E	37,803	F	38,559	F	39,331	F	40,117	F
9. Folsom Boulevard – Natoma Street to Blue Ravine Road	4AD	41,305	F	42,131	F	42,974	F	43,833	F	44,710	F	45,604	F	46,516	F
10. Folsom Boulevard – Blue Ravine Road to Iron Point Road	4AD	33,437	D	34,106	D	34,788	D	35,484	E	36,194	E	36,918	E	37,656	F
11. Oak Hill Drive – Barton Road to Folsom-Auburn Road	2C	5,901	D	6,019	D	6,139	D	6,262	D	6,387	D	6,515	D	6,645	D
12. Santa Juanita Avenue – Barton Road to Oak Avenue Parkway	2A	5,245	C	5,350	C	5,457	C	5,566	C	5,677	C	5,791	C	5,907	C
13. Sierra College Boulevard – Douglas Boulevard to Eureka Road	4AD	32,126	D	32,769	D	33,424	D	34,093	D	34,774	D	35,470	E	36,179	E
14. Hazel Avenue – Oak Avenue to Greenback Lane	4AMD	38,683	F	39,456	F	40,245	F	41,050	F	41,871	F	42,709	F	43,563	F
15. Hazel Avenue – Greenback Lane to Madison Avenue	4AMD	47,861	F	48,819	F	49,795	F	50,791	F	51,807	F	52,843	F	53,900	F
16. Hazel Avenue – Winding Way to Gold Country Boulevard	4AMD	61,958	F	63,197	F	64,461	F	65,750	F	67,065	F	68,406	F	69,774	F
17. Oak Avenue Parkway – Hazel Avenue to Santa Juanita Avenue	2AMD	13,550	C	13,821	C	14,097	C	14,379	C	14,667	D	14,960	D	15,259	D
18. Oak Avenue Parkway – American River Canyon Drive to Folsom-Auburn Road	4AD	17,702	C	18,056	C	18,417	C	18,786	C	19,161	C	19,545	D	19,936	D
19. Greenback Lane – Hazel Avenue to Madison Avenue	4AMD	26,335	C	26,861	C	27,399	C	27,947	C	28,506	C	29,076	D	29,657	D
20. Madison Avenue – Hazel Avenue to Greenback Lane	4AMD	35,841	E	36,558	F	37,289	F	38,035	F	38,796	F	39,572	F	40,363	F
21. Rainbow Bridge – Folsom Boulevard to Leidesdorff Street	2A	44,037	F	44,918	F	45,816	F	46,732	F	47,667	F	48,620	F	49,593	F
22. Folsom Dam Road – Folsom-Auburn Road to East Natoma Street [2]	2A	-		-		-		-		-		-		-	
23. East Natoma Street – Cimmaron Circle to Folsom Dam Road	4AU	18,139	D	18,502	D	18,872	D	19,250	D	19,635	D	20,027	D	20,428	D
24. East Natoma Street – Folsom Dam Road to Green Valley Road	4AU	29,613	F	30,205	F	30,809	F	31,425	F	32,054	F	32,695	F	33,349	F
25. Green Valley Road – East Natoma Street to Sophia Parkway	4AU	34,967	F	35,667	F	36,380	F	37,108	F	37,850	F	38,607	F	39,379	F
26. Sophia Parkway – Green Valley Road to Elmores Way	4AD	7,103	C	7,245	C	7,390	C	7,537	C	7,688	C	7,842	C	7,999	C
27. El Dorado Hills Boulevard – Green Valley Road to Francisco Drive	2A	8,414	C	8,582	C	8,754	C	8,929	C	9,108	C	9,290	C	9,476	C
28. Briggs Ranch Drive – East Natoma Street to Oak Avenue Parkway	2C	6,666	D	6,799	D	6,935	D	7,074	D	7,215	D	7,359	D	7,507	D
29. Oak Avenue Parkway – Willow Creek Drive to Blue Ravine Road	4AD	9,616	C	9,808	C	10,004	C	10,205	C	10,409	C	10,617	C	10,829	C
30. Oak Avenue Parkway – Blue Ravine Road to East Bidwell Street	6AD	24,259	C	24,744	C	25,239	C	25,743	C	26,258	C	26,783	C	27,319	D
31. Oak Avenue Parkway – East Bidwell Street to Riley Street	6AD	14,205	C	14,490	C	14,779	C	15,075	C	15,376	C	15,684	C	15,998	C
32. East Bidwell Street – Glenn Street to Blue Ravine Road	4AD	22,073	D	22,515	D	22,965	D	23,424	D	23,893	D	24,370	D	24,858	D
33. East Bidwell Street – Blue Ravine Road to Oak Avenue Parkway	6AD	27,427	D	27,976	D	28,536	D	29,106	D	29,688	D	30,282	D	30,888	D
34. East Bidwell Street – Clarksville Road to Iron Point Road	6AD	42,944	D	43,803	D	44,679	D	45,573	D	46,484	D	47,414	D	48,362	D
35. Sibley Street – Glenn Drive to Blue Ravine Road	2A	24,696	F	25,190	F	25,693	F	26,207	F	26,731	F	27,266	F	27,811	F
36. Prairie City Road – Blue Ravine Road to Iron Point Road	4AD	24,586	D	25,078	D	25,580	D	26,091	D	26,613	D	27,145	D	27,688	D
37. Blue Ravine Road – Folsom Boulevard to Sibley Street	6AD	19,778	C	20,174	C	20,577	C	20,989	C	21,409	C	21,837	C	22,274	C
38. Blue Ravine Road – Sibley Street to Riley Street	4AU	31,798	F	32,434	F	33,083	F	33,745	F	34,420	F	35,108	F	35,810	F
39. Blue Ravine Road – Riley Street to East Bidwell Street	4AU	25,570	D	26,081	D	26,603	D	27,135	D	27,678	E	28,231	E	28,796	E
40. Blue Ravine Road – East Bidwell Street to Oak Avenue Parkway	4AD	18,904	C	19,282	D	19,668	D	20,061	D	20,462	D	20,872	D	21,289	D
41. Blue Ravine Road – Oak Avenue Parkway to Green Valley Road	4AD	21,308	D	21,734	D	22,169	D	22,612	D	23,065	D	23,526	D	23,996	D
42. Iron Point Road – Black Diamond Drive to Prairie City Road	4AD	15,845	C	16,161	C	16,485	C	16,814	C	17,151	C	17,494	C	17,844	C
43. U.S. 50 – Hazel Avenue to Folsom Boulevard	4FA	127,631	F	130,183	F	132,787	F	135,443	F	138,151	F	140,914	F	143,733	F
44. U.S. 50 – Folsom Boulevard to Prairie City Road	4F	108,180	F	110,344	F	112,550	F	114,801	F	117,097	F	119,439	F	121,828	F
45. U.S. 50 – Prairie City Road to East Bidwell Street	4F	78,458	E	80,027	E	81,627	F	83,260	F	84,925	F	86,624	F	88,356	F
46. U.S. 50 – East Bidwell Street to County line	4F	89,494	F	91,284	F	93,110	F	94,972	F	96,872	F	98,809	F	100,785	F
47. Folsom Lake Crossing Bridge	4AHD	28,848	C	29,425	C	30,013	C	30,614	C	31,226	C	31,851	C	32,488	D
Folsom Bridge Summary (segments 8,21, and 47)	-	108,508	-	110,678	-	112,892	-	115,149	-	117,452	-	119,801	-	122,197	-

[1] Year 2011-2016 Traffic Volume calculated from Year 2010 ADTs with an annual 2% growth ratio.

[2] Folsom Dam Road has been converted to a restricted access road for construction after the Folsom Lake Crossing was built in 2007.

ROADWAY SEGMENT TRAFFIC VOLUMES

BUILD ADD-ON ADT

Roadway Segment	Additional Trips
1. Douglas Boulevard – Barton Road to Folsom-Auburn Road	57
2. Barton Road – Douglas Boulevard to Eureka Road	0
3. Eureka Road – Barton Road to Folsom-Auburn Road	4
4. Auburn-Folsom Road – Douglas Boulevard to Eureka Road	61
5. Auburn-Folsom Road – Eureka Road to Oak Hill Drive	61
6. Folsom-Auburn Road – Oak Hill Drive to Folsom Dam Road	61
7. Folsom-Auburn Road – Folsom Dam Road to Oak Avenue	60
8. Folsom Boulevard – Greenback Lane to Leidesdorff Street	32
9. Folsom Boulevard – Natoma Street to Blue Ravine Road	32
10. Folsom Boulevard – Blue Ravine Road to Iron Point Road	32
11. Oak Hill Drive – Barton Road to Folsom-Auburn Road	0
12. Santa Juanita Avenue – Barton Road to Oak Avenue Parkway	0
13. Sierra College Boulevard – Douglas Boulevard to Eureka Road	0
14. Hazel Avenue – Oak Avenue to Greenback Lane	0
15. Hazel Avenue – Greenback Lane to Madison Avenue	0
16. Hazel Avenue – Winding Way to Gold Country Boulevard	28
17. Oak Avenue Parkway – Hazel Avenue to Santa Juanita Avenue	0
18. Oak Avenue Parkway – American River Canyon Drive to Folsom-Auburn Road	0
19. Greenback Lane – Hazel Avenue to Madison Avenue	0
20. Madison Avenue – Hazel Avenue to Greenback Lane	28
21. Rainbow Bridge – Folsom Boulevard to Leidesdorff Street	0
22. Folsom Dam Road – Folsom-Auburn Road to East Natoma Street [2]	0
23. East Natoma Street – Cimmaron Circle to Folsom Dam Road	4
24. East Natoma Street – Folsom Dam Road to Green Valley Road	25
25. Green Valley Road – East Natoma Street to Sophia Parkway	23
26. Sophia Parkway – Green Valley Road to Elmores Way	0
27. El Dorado Hills Boulevard – Green Valley Road to Francisco Drive	0
28. Briggs Ranch Drive – East Natoma Street to Oak Avenue Parkway	4
29. Oak Avenue Parkway – Willow Creek Drive to Blue Ravine Road	4
30. Oak Avenue Parkway – Blue Ravine Road to East Bidwell Street	23
31. Oak Avenue Parkway – East Bidwell Street to Riley Street	0
32. East Bidwell Street – Glenn Street to Blue Ravine Road	4
33. East Bidwell Street – Blue Ravine Road to Oak Avenue Parkway	0
34. East Bidwell Street – Clarksville Road to Iron Point Road	23
35. Sibley Street – Glenn Drive to Blue Ravine Road	0
36. Prairie City Road – Blue Ravine Road to Iron Point Road	0
37. Blue Ravine Road – Folsom Boulevard to Sibley Street	0
38. Blue Ravine Road – Sibley Street to Riley Street	0
39. Blue Ravine Road – Riley Street to East Bidwell Street	0
40. Blue Ravine Road – East Bidwell Street to Oak Avenue Parkway	4
41. Blue Ravine Road – Oak Avenue Parkway to Green Valley Road	23
42. Iron Point Road – Black Diamond Drive to Prairie City Road	0
43. U.S. 50 – Hazel Avenue to Folsom Boulevard	81
44. U.S. 50 – Folsom Boulevard to Prairie City Road	21
45. U.S. 50 – Prairie City Road to East Bidwell Street	21
46. U.S. 50 – East Bidwell Street to County line	2
47. Folsom Lake Crossing Bridge	150

ROADWAY SEGMENT TRAFFIC VOLUMES

YR 2010 – 2016 BUILD ADT AND LOS

Roadway Segment LOS - Folsom Dam Control Structure and Stilling Basin Project - **2010-2016 Build Conditions**

Roadway Segment	Functional Class	Year 2010 Build		Year 2011 No-Build[1]		Year 2012 No-Build[1]		Year 2013 No-Build[1]		Year 2014 No-Build[1]		Year 2015 No-Build[1]		Year 2016 No-Build[1]	
		Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS	Traffic Volumes	LOS
1. Douglas Boulevard – Barton Road to Folsom-Auburn Road	4AD	43,985	F	44,863	F	45,759	F	46,673	F	47,606	F	48,557	F	49,527	F
2. Barton Road – Douglas Boulevard to Eureka Road	2A	12,348	D	12,595	D	12,847	D	13,104	D	13,366	D	13,633	D	13,906	D
3. Eureka Road – Barton Road to Folsom-Auburn Road	2A	5,686	C	5,800	C	5,916	C	6,034	C	6,155	C	6,278	C	6,403	C
4. Auburn-Folsom Road – Douglas Boulevard to Eureka Road	4AU	37,542	F	38,291	F	39,056	F	39,836	F	40,631	F	41,443	F	42,270	F
5. Auburn-Folsom Road – Eureka Road to Oak Hill Drive	2A	33,389	F	34,056	F	34,736	F	35,429	F	36,136	F	36,858	F	37,594	F
6. Folsom-Auburn Road – Oak Hill Drive to Folsom Dam Road	4AD	44,098	F	44,979	F	45,877	F	46,793	F	47,728	F	48,681	F	49,654	F
7. Folsom-Auburn Road – Folsom Dam Road to Oak Avenue	4AU	23,444	D	23,912	D	24,389	D	24,876	D	25,372	D	25,878	D	26,395	D
8. Folsom Boulevard – Greenback Lane to Leidesdorff Street	4AD	35,655	E	36,367	E	37,094	E	37,835	F	38,591	F	39,363	F	40,149	F
9. Folsom Boulevard – Natoma Street to Blue Ravine Road	4AD	41,337	F	42,163	F	43,006	F	43,865	F	44,742	F	45,636	F	46,548	F
10. Folsom Boulevard – Blue Ravine Road to Iron Point Road	4AD	33,469	D	34,138	D	34,820	D	35,516	E	36,226	E	36,950	E	37,688	F
11. Oak Hill Drive – Barton Road to Folsom-Auburn Road	2C	5,901	D	6,019	D	6,139	D	6,262	D	6,387	D	6,515	D	6,645	D
12. Santa Juanita Avenue – Barton Road to Oak Avenue Parkway	2A	5,245	C	5,350	C	5,457	C	5,566	C	5,677	C	5,791	C	5,907	C
13. Sierra College Boulevard – Douglas Boulevard to Eureka Road	4AD	32,126	D	32,769	D	33,424	D	34,093	D	34,774	D	35,470	E	36,179	E
14. Hazel Avenue – Oak Avenue to Greenback Lane	4AMD	38,683	F	39,456	F	40,245	F	41,050	F	41,871	F	42,709	F	43,563	F
15. Hazel Avenue – Greenback Lane to Madison Avenue	4AMD	47,861	F	48,819	F	49,795	F	50,791	F	51,807	F	52,843	F	53,900	F
16. Hazel Avenue – Winding Way to Gold Country Boulevard	4AMD	61,986	F	63,225	F	64,489	F	65,778	F	67,093	F	68,434	F	69,802	F
17. Oak Avenue Parkway – Hazel Avenue to Santa Juanita Avenue	2AMD	13,550	C	13,821	C	14,097	C	14,379	C	14,667	D	14,960	D	15,259	D
18. Oak Avenue Parkway – American River Canyon Drive to Folsom-Auburn Road	4AD	17,702	C	18,056	C	18,417	C	18,786	C	19,161	C	19,545	D	19,936	D
19. Greenback Lane – Hazel Avenue to Madison Avenue	4AMD	26,335	C	26,861	C	27,399	C	27,947	C	28,506	C	29,076	D	29,657	D
20. Madison Avenue – Hazel Avenue to Greenback Lane	4AMD	35,869	E	36,586	F	37,317	F	38,063	F	38,824	F	39,600	F	40,391	F
21. Rainbow Bridge – Folsom Boulevard to Leidesdorff Street	2A	44,037	F	44,918	F	45,816	F	46,732	F	47,667	F	48,620	F	49,593	F
22. Folsom Dam Road – Folsom-Auburn Road to East Natoma Street [2]	2A	-		-		-		-		-		-		-	
23. East Natoma Street – Cimmaron Circle to Folsom Dam Road	4AU	18,143	D	18,506	D	18,876	D	19,254	D	19,639	D	20,031	D	20,432	D
24. East Natoma Street – Folsom Dam Road to Green Valley Road	4AU	29,638	F	30,230	F	30,834	F	31,450	F	32,079	F	32,720	F	33,374	F
25. Green Valley Road – East Natoma Street to Sophia Parkway	4AU	34,990	F	35,690	F	36,403	F	37,131	F	37,873	F	38,630	F	39,402	F
26. Sophia Parkway – Green Valley Road to Elmores Way	4AD	7,103	C	7,245	C	7,390	C	7,537	C	7,688	C	7,842	C	7,999	C
27. El Dorado Hills Boulevard – Green Valley Road to Francisco Drive	2A	8,414	C	8,582	C	8,754	C	8,929	C	9,108	C	9,290	C	9,476	C
28. Briggs Ranch Drive – East Natoma Street to Oak Avenue Parkway	2C	6,670	D	6,803	D	6,939	D	7,078	D	7,219	D	7,363	D	7,511	D
29. Oak Avenue Parkway – Willow Creek Drive to Blue Ravine Road	4AD	9,620	C	9,812	C	10,008	C	10,209	C	10,413	C	10,621	C	10,833	C
30. Oak Avenue Parkway – Blue Ravine Road to East Bidwell Street	6AD	24,282	C	24,767	C	25,262	C	25,766	C	26,281	C	26,806	C	27,342	D
31. Oak Avenue Parkway – East Bidwell Street to Riley Street	6AD	14,205	C	14,490	C	14,779	C	15,075	C	15,376	C	15,684	C	15,998	C
32. East Bidwell Street – Glenn Street to Blue Ravine Road	4AD	22,077	D	22,519	D	22,969	D	23,428	D	23,897	D	24,374	D	24,862	D
33. East Bidwell Street – Blue Ravine Road to Oak Avenue Parkway	6AD	27,427	D	27,976	D	28,536	D	29,106	D	29,688	D	30,282	D	30,888	D
34. East Bidwell Street – Clarksville Road to Iron Point Road	6AD	42,967	D	43,826	D	44,702	D	45,596	D	46,507	D	47,437	D	48,385	D
35. Sibley Street – Glenn Drive to Blue Ravine Road	2A	24,696	F	25,190	F	25,693	F	26,207	F	26,731	F	27,266	F	27,811	F
36. Prairie City Road – Blue Ravine Road to Iron Point Road	4AD	24,586	D	25,078	D	25,580	D	26,091	D	26,613	D	27,145	D	27,688	D
37. Blue Ravine Road – Folsom Boulevard to Sibley Street	6AD	19,778	C	20,174	C	20,577	C	20,989	C	21,409	C	21,837	C	22,274	C
38. Blue Ravine Road – Sibley Street to Riley Street	4AU	31,798	F	32,434	F	33,083	F	33,745	F	34,420	F	35,108	F	35,810	F
39. Blue Ravine Road – Riley Street to East Bidwell Street	4AU	25,570	D	26,081	D	26,603	D	27,135	D	27,678	E	28,231	E	28,796	E
40. Blue Ravine Road – East Bidwell Street to Oak Avenue Parkway	4AD	18,908	C	19,286	D	19,672	D	20,065	D	20,466	D	20,876	D	21,293	D
41. Blue Ravine Road – Oak Avenue Parkway to Green Valley Road	4AD	21,331	D	21,757	D	22,192	D	22,635	D	23,088	D	23,549	D	24,019	D
42. Iron Point Road – Black Diamond Drive to Prairie City Road	4AD	15,845	C	16,161	C	16,485	C	16,814	C	17,151	C	17,494	C	17,844	C
43. U.S. 50 – Hazel Avenue to Folsom Boulevard	4FA	127,712	F	130,264	F	132,868	F	135,524	F	138,232	F	140,995	F	143,814	F
44. U.S. 50 – Folsom Boulevard to Prairie City Road	4F	108,201	F	110,365	F	112,571	F	114,822	F	117,118	F	119,460	F	121,849	F
45. U.S. 50 – Prairie City Road to East Bidwell Street	4F	78,479	E	80,048	E	81,648	F	83,281	F	84,946	F	86,645	F	88,377	F
46. U.S. 50 – East Bidwell Street to County line	4F	89,496	F	91,286	F	93,112	F	94,974	F	96,874	F	98,811	F	100,787	F
47. Folsom Lake Crossing Bridge	4AHD	28,998	C	29,575	C	30,163	C	30,764	C	31,376	C	32,001	D	32,638	D
Folsom Bridge Summary (segments 8,21, and 47)	-	108,690	-	110,860	-	113,074	-	115,331	-	117,634	-	119,983	-	122,379	-

[1] Year 2010-2016 Traffic Volume calculated from Year 2010 ADTs with an annual 2% growth ratio plus additional trips generated from worker commuting and off-site haul trucks

[2] Folsom Dam Road has been converted to a restricted access road for construction after the Folsom Lake Crossing was built in 2007.

ROADWAY SEGMENT LOS THRESHOLD

Functional Class and Daily Roadway Segment LOS Thresholds

Code	Facility Type	(Total vehicles per day in both directions except as noted)				
		A	B	C	D	E
2C	2-Lane Collector	-	-	5,700	9,000	9,800
MI2	Minor 2-Lane Highway	900	2,000	6,800	14,100	17,400
MA2	Major 2-Lane Highway	1,200	2,900	7,900	16,000	20,500
MH4	4-Lane, Multilane Highway	10,700	17,600	25,300	32,800	36,500
2A	2-Lane Arterial	-	-	9,700	17,600	18,700
4AU	4-Lane Arterial, Undivided	-	-	17,500	27,400	28,900
4AD	4-Lane Arterial, Divided	-	-	19,200	35,400	37,400
6AD	6-Lane Arterial, Divided	-	-	27,100	53,200	56,000
8AD	8-Lane Arterial, Divided	-	-	37,200	71,100	74,700
4F	4-Lane Freeway	22,200	40,200	57,600	71,400	80,200
4FA	4-Lane Freeway with Auxiliary Lanes	28,200	51,000	72,800	89,800	100,700
2AMD	2-Lane Arterial, Moderate Access Control SAC COUNTY	10,800	12,600	14,400	16,200	18,000
4AMD	4-Lane Arterial, Moderate Access Control SAC COUNTY	21,600	25,200	28,800	32,400	36,000
6AMD	6-Lane Arterial, Moderate Access Control SAC COUNTY	32,400	37,800	43,200	48,600	54,000
4AHD	4-Lane Arterial, High Access Control SAC COUNTY	24,000	28,000	32,000	36,000	40,000
6AHD	6-Lane Arterial, High Access Control SAC COUNTY	36,000	42,000	48,000	54,000	60,000